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IMPRESSIONS OF TUBERCULOSIS ABROAD.[1]

By D. R. W. COWAN, M.B., B.S., F.R.A.C.P.,
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PERHAPS my only justification for accepting this invitation to speak tonight on my experiences abroad in the control of tuberculosis is the fact that almost the whole of my professional life of over thirty-seven years has been spent in the study of this disease, and in the service of those suffering from it. A speaker in San Francisco remarked that one of the major hazards in connexion with the control of tuberculosis was the senility of the men taking part in it. There is some substance in this observation. It is a great pity that more of the younger men, with new ideas and a fresh outlook, do not become interested in this branch of medicine, which constitutes perhaps the most serious single problem and the greatest challenge to the profession. It is a social problem also, so it behoves the people as well as the official health agencies to play their part. It is in this way that voluntary organizations, consisting of laymen as well as doctors, can be of great assistance. To the younger men the study of tuberculosis may seem a dull and prosaic and rather hopeless affair. But it has its compensations. There is plenty of scope for good and interesting work; we have not by any means learnt all there is to know about tuberculosis.

Before I attempt to tell you of the impressions gained on my recent trip abroad, I should like to give you a brief résumé of my experiences at home. I became interested in the subject for family reasons, and I spent some time in its study in England in 1910 and 1911. When I returned to practice in Adelaide in 1912 my interest was thoroughly aroused. Twenty years of patient and subdued effort accomplished exactly nothing in securing cooperation or indeed any activity at all on the part of the official health agencies. In 1927 there were great expectations when Dr. M. J. Holmes, of the Commonwealth Department of Health, produced his excellent report on the control of tuberculosis in Australia. But this went the same way as all the other reports, and nothing came of it. From 1932 onwards the fight in South Australia took a much more active course. It is probably true that no one, not even an Irishman, enjoys a constant struggle with authority. It can at least be said that some progress has been made in the last few years, and the prospects for a concerted drive against tuberculosis are brighter now than they have ever been before. Success in this campaign depends upon the fullest cooperation of all concerned—namely, Federal and State health authorities, the medical profession, and the people generally. It is sincerely to be hoped that this will be attained.

My trip abroad was made possible by the courtesy of the South Australian Government, which delegated me as its representative to attend in London the Commonwealth and Empire Health and Tuberculosis Conference convened by the National Association for the Prevention of Tuberculosis ("NAPT"). It was my good fortune also to attend the annual meeting of the National Tuberculosis Association of America held in San Francisco, and a joint meeting of the Tuberculosis Association of England and the Tuberculosis Society of Scotland held in Edinburgh. The work of these meetings was of the highest order, men of outstanding attainment attended, the programmes were excellent and gave a good opportunity to study the world's anti-tuberculosis activities at first hand.

The "NAPT" is a voluntary body of very high standing in England. His Majesty the King is Patron, and Her Royal Highness the Duchess of Kent is President. The Chairman of Conference was Her Grace the Duchess of Portland, but unfortunately she was unable to attend. Her place was taken by Sir Robert Young, Vice-Chairman of Council. It was a very impressive gathering, being attended by almost 1000 delegates, and 55 countries were represented. Except for a small meeting in 1943, this

[1] Read at a meeting of the South Australian Branch of the British Medical Association on November 27, 1947.

was the first conference held by the "NAPT" since the beginning of World War II. Its great success reflects the highest credit on those responsible for its arrangement. Both social and scientific aspects left nothing to be desired, and made a most favourable impression on those fortunate enough to be present. There is little doubt that gatherings of this sort are of the greatest value in bringing together experts from all over the world and of facilitating the fullest interchange of views and opinions. It is a great privilege and an inspiration to meet and talk with men and women occupying such high positions in medical and lay spheres.

It will be realized that in all this work reduplication and overlapping have occurred, and there has been scope for many differences of opinion concerning methods and details. But on the whole there has been considerable unanimity of opinion as to what measures are required to control tuberculosis and possibly ultimately to eradicate it from our midst. To attempt to enumerate all the measures discussed would be beyond the scope of this paper; but I shall try to pick out the points of most interest and value and make some comments on them. I shall proceed on the accepted lines of prevention, diagnosis and treatment, including rehabilitation and economic relief, and I shall add something on the relation of official health services and voluntary agencies.

Prevention.

The subject for discussion of outstanding importance in regard to prevention was the role of "B.C.G." vaccination in the prevention of tuberculosis. In the Scandinavian countries this method has been in use for many years and is now accepted as being of great value, though it is not claimed as a complete preventive. Long discussions took place both in America and in England on this subject, and it was interesting to hear the views of two of the world's greatest authorities—namely, Johannes Holm, of Copenhagen, and Hans Jacob Ustvedt, of Oslo. The result of recent work in Canada confirms the favourable opinion of the Scandinavians. As a result of this, the authorities in the United States and Great Britain, who have hitherto held rather aloof, are preparing for large-scale field trials of the method. Herman Hilleboe, of the United States Public Health Department, said: "The evidence is such that we cannot afford to ignore it any longer."

Sufficient well-controlled work has now been done for it to be safe to make the following general statements:

1. "B.C.G." vaccination is harmless, and cannot produce progressive tuberculous changes.

2. In laboratory animals, it has been proved that the vaccine does produce immunity, though it may be relative and transient.

3. In certain conditions, vaccination with "B.C.G." of non-reactors to tuberculin does succeed in considerably reducing tuberculosis morbidity.

These results have been confirmed by many workers and may be accepted without reserve. Vaccination is recommended for healthy persons who are exposed to infection such as non-reacting nurses, students and children in tuberculous families. Recommendations on these lines have been made both by Dr. E. North to the Commonwealth Government, and by me to the South Australian Government.

Diagnosis.

Mass surveys by the so-called miniature X-ray films are now accepted as standard practice and are being used on an ever-increasing scale. I spent some time at the Ministry of Health's X-ray survey unit in London, where I received great help from Dr. Peter Kerley and Miss K. C. Clark. This unit is attached to the Medical Research Council of the Privy Council, and valuable research work is being done there. The unit had remained faithful to the 35 millimetre method, for the reason that they had not up to that time seen anything better. But a new camera unit had been evolved which promised to be a great advance on anything used hitherto. This unit was to be thoroughly tested under actual working conditions before any official pronouncement on it was made.

There was a good deal of discussion and by no means any unanimity of opinion on the practicability or even the necessity of radiologically examining all the people at periodic intervals. But there was a very general approval that all patients, both indoor and outdoor, attending general hospitals should be so examined, as well as "contacts" and "suspects" and persons in hazardous industries. The ideas enunciated by C. H. C. Toussaint in the booklet "Tuberculosis and the General Practitioner" are worthy of consideration.

Treatment.

Considerable attention has been given to the use of streptomycin in the treatment of tuberculosis. Hitherto most of this work has been done in the United States; but this drug is being used to an increasing extent in England under the direction of the Medical Research Council. In San Francisco a whole day was devoted to a discussion of its use in different tuberculous conditions. In England, because of scarcity of the drug and its high price, its use was confined to tuberculous meningitis, miliary tuberculosis, and some of the more acute cases of tuberculous pneumonia.

It seems that in some of the acute conditions, which hitherto have been almost invariably fatal, streptomycin has succeeded in arresting the disease in a considerable number of cases. In these conditions and in some others its use is certainly justified; but it does not hold out very great hopes in the average case of chronic fibrocaseous pulmonary tuberculosis. In Australia it would seem wise for the present to restrict its use to the same conditions as in England. With the larger doses used at first unpleasant side-effects, such as vestibular disturbance, were common; but they have been much less so since smaller doses came into more general use. It is even possible that one injection a day may be effective.

Thoracic Surgery.

Considerable progress has been made in the art and practice of thoracic surgery, which has now come to have a recognized place in the treatment of many heart and lung conditions, including pulmonary tuberculosis.

It must be appreciated that thoracic surgery is a highly specialized branch of surgery. If it is to be carried out effectively, a highly specialized unit must be set up with an appropriate specialized staff, not only of surgeons, but of anæsthetists, physicians, nurses and physiotherapists. What is needed is a specialized chest hospital such as Brompton, Harefield or Sully, with accommodation for about 100 patients, where both tuberculous and non-tuberculous patients can be treated, and to which patients presenting special difficulties can be admitted for diagnosis. Such a hospital should constitute a wing of a general hospital and be within the ambit of the medical school for teaching purposes. The staff of this hospital should be a paid staff, and to attract good men, adequate remuneration should be offered. The Society of Thoracic Surgeons of England has issued a memorandum on this subject which should be studied by any authority proposing to set up a thoracic surgery unit.

Rehabilitation.

There is general agreement that some special form of rehabilitation is needed for the tuberculous, but just what form it should take is not so clearly defined. There are two main types of rehabilitation centre—namely, the sheltered workshop, such as that in operation at Altro in New York, and the industrial colony or village settlement, such as that in operation at Papworth and Preston Hall in England. An outstanding figure in this field is Dr. R. R. Trail, of London, the medical director of that grand institution the Papworth Village Settlement near Cambridge. Patients are given the most skilled medical and surgical treatment, and after recovery are provided with suitable remunerative employment and become permanent settlers with their families. Preston Hall, for ex-servicemen, is run on somewhat similar lines; but an effort is made to limit the stay of patients to a period of five years. These are splendid institutions, which might well be copied by others.

In the United States, on the other hand, the policy appears to be to get the patient back not only to his family, but also to his original occupation. Sheltered workshops are provided where a man or woman, after discharge from a sanatorium, works for a year or two in a "hardening-up" process in preparation for a return to his or her original occupation. Altro, in New York, is perhaps the foremost institution of this kind. Only one industry is conducted—namely, the making of articles of attire such as coats and gowns and nurses' costumes. This seems a very suitable industry for convalescent tuberculous sufferers, and much good work has been done at Altro. There are many modifications of these two main types of rehabilitation centre, and each tuberculosis service must work out its own plan. The essential requirements, after a patient's discharge from a sanatorium, would seem to be good home conditions and suitable employment. In South Australia a *questionnaire* revealed that patients are strongly opposed to the village settlement plan, but favour a sheltered workshop with some suitable living accommodation near by. This is the plan which has been adopted by the South Australian Tuberculosis Association, and which promises to be successful.

Voluntary Organizations.

A close inquiry was made into the relations between the official health services and those great voluntary bodies, the National Association for the Prevention of Tuberculosis in England and the National Tuberculosis Associations of America and of Canada. There was complete unanimity of opinion that the best results were obtained through the combined efforts of official agencies and voluntary organizations. Dr. Herman Hilleboe, who occupied a high position in the United States Public Health Service, was also an active member on the council of the National Tuberculosis Association, and Sir Wilson Jameson, the Chief Medical Officer of the Ministry of Health in England, is a member of the council of the "NAPT". Searching inquiry revealed nothing but praise for the work of the voluntary organizations, and no adverse criticism was heard. The South Australia Tuberculosis Association has done much useful work and it can do still more. The inauguration of an Australian Association for the Prevention of Tuberculosis could do much to enlist public support and assist the Commonwealth and State Governments in the campaign against tuberculosis.

A few years ago a distinguished visitor in the person of Dr. Victor Heisen said that we should have no tuberculosis in Australia. We are far from attaining this ideal, but the way is becoming clearer. The Commonwealth has appointed Dr. H. W. Wunderly, a distinguished tuberculosis expert, to be its Director of Tuberculosis. He needs and he should have the whole-hearted support of every worker in this field, lay and medical. The task of eradicating tuberculosis is not an easy one and will not be accomplished without the fullest cooperation of all concerned.

Conclusion.

Outstanding impressions gained on this trip abroad were the high calibre of the men taking part in the various conferences, the trouble to which they had gone and the long distances over which they had travelled to attend, and the meticulous care that they had taken in the preparation of papers and exhibits. The discussions were free and frank, and on a high plane. It is not unreasonable to hope that the greatest respect will be paid to the result of these deliberations.

In many countries, and especially in those where the white races predominate and where the tuberculosis services are well organized, there has been a gratifying decrease in the mortality rates from tuberculosis in the past forty years. But in other countries, especially those in which the coloured races predominate and those which have experienced the ravages of war most severely, the position is far less satisfactory. No one knows how bad it is in Asia. The world position in regard to tuberculosis is not good, and it will need almost superhuman efforts on the part of all tuberculosis workers to cope with it. This is not the time to relax in our efforts, but rather to redouble them, so that this insidious and relentless enemy of mankind can be finally defeated. This can be done, but not if we are apathetic and half-hearted in our efforts.

THE TREATMENT OF BLOCKED FALLOPIAN TUBES BY PRESSURE INJECTIONS OF GAS AND IODIZED OIL.[1]

By ALAN GRANT AND ROBERT MACKEY,
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ONE of the most exasperating situations encountered in sterility is that of the married couple in whom the major infertility factor operating is occlusion of the wife's Fallopian tubes. An apparently simple solution to this pathological state of the tubes is some form of surgery, which establishes an artificial ostium or resects the damaged segment of a tube by the performance of salpingostomy or by tubal implantations. In practice such a procedure yields a very disappointing harvest of patent tubes and pregnancies. We can only premise that the muscular wall and mucous membrane of the tube are too damaged to function again in a normal manner in most patients. After the operation, one often finds that patent but rigid tubes showing an absence of peristaltic waves in the kymographic tracing are established.

It is a clinical impression that salpingostomy is a more successful operation when the tubes have been blocked by some extratubal pathological process such as acute appendicitis, than when they are occluded as the result of a septic miscarriage or puerperal sepsis in which the physiology of the tube has been badly damaged.

Ætiology of Tubal Block.

In a survey of 247 cases of tubal block which includes the 124 cases reported in this article, the presumed ætiology is as follows: tuberculosis one case, placental polypus one case, previous Cæsarean section three cases, peritonitis three cases, previous normal confinement four cases, pelvic operation eight cases, ectopic pregnancy ten cases, puerperal sepsis 14 cases, genital hypoplasia 14 cases, salpingitis 21 cases, previous history of appendicectomy 27 cases, no known cause 69 cases, previous history of miscarriage 72 cases.

We have set out to try an alternative procedure to the surgical measures mentioned above, by endeavouring to reestablish tubal patency with high pressure injections of iodized oil and gas, and this paper is only a preliminary communication of our results to date. It is our aim to collect an adequate amount of data to answer the following three questions: (i) Is it possible to establish tubal patency in patients with blocked tubes by high pressure injections made through the uterine cavity? (ii) Is this a safe procedure? (iii) Are the ultimate results in terms of patency achieved and pregnancies resulting any better than those offered by surgical operations?

Before we proceed to discuss the technique used in these cases, it is necessary to inquire into the results of surgical operations on patients who present themselves with this disorder as their paramount infertility factor.

Results of Surgical Treatment of Blocked Tubes.

The largest group of cases published is the collected series of Greenhill, consisting of 818 plastic operations on the tubes; 54 pregnancies took place, an incidence of 6·6% or one pregnancy for every 15 operations. Complications occurred in many of these pregnancies and the ultimate successful result was one baby for every 22·5 operations.[1] According to these statistics, we must do as well as or better than one baby for every 20 patients suffering from occlusion of the tubes.

[1] This work was done with the aid of a grant from the National Health and Medical Research Council.

TABLE I.[1]

Analysis of Treatment of Blocked Fallopian Tubes: 124 Cases.

Patient's Initials.	Primary or Secondary Sterility.	Other Factors.		Presumed Ætiology of Block.	Site of Block.	When was Tube Patent.			Result.	Accessory Treatment (Diathermy or Œstrogen.)	Pregnant or Not.	Latent Period.	Comment.
		Male.	Female.			Test I.	Test II.	Test III.					
L.D.	Secondary.	Fertile.	Cervicitis, hypoplasia.	I. Mc.	Cornua.	G. and O. No.	G. No.	G. and O. No.	Blocked.	Œstrogen.			
M.F.	Secondary.	Subfertile.	Vaginitis.	I. Mc.	Cornua.	G. No.	O. No.	G. No.	Blocked.	Œstrogen.			
M.J.	Secondary.	Fertile.	—	—	—	O. No.	O. No.	O. Yes.	Patent.	Dienœstrol.			
C.N.	Secondary.	Fertile.	Cervicitis.	Puerperal sepsis.	Cornua.	G. Yes.	—	—	Patent.	Œstrogen.			
W.J. ..	Secondary.	Fertile.	Cervicitis.	Toxæmia, sepsis.	Cornua.	G. No.	O. Yes.	—	Patent.	Œstrogen.	Yes.	Two months.	Left ectopic.
H.R. ..	Primary.	Fertile.	Small fibroid uterus.	—	Fimbria.	O. No.	G. No.	O No.	Blocked.	Œstrogen.	—		Salpingostomy, myomectomy, tubal patency.
W.K. ..	Primary.	Fertile.	—	—	Fimbria.	G. No.	G. Yes.	O. Yes.	Patent.	Œstrogen.	Yes.	Three months.	Normal pregnancy.
A.E.	Secondary.	Fertile.	Cervicitis.	I. Mc.	Left isthmus, right cornua.	O. No.	O. No.	O. No.	Blocked.	Œstrogen.			
R.R. ..	Primary.	Fertile.	Acute appendicitis, cervicitis.	—	Fimbria.	G. No.	G. No.	O. Yes.	Patent.	Œstrogen.			
B.E.	Primary.	Subfertile.	*Hypoplasia uteri.*	Cause unknown.	Cornual occlusion.	G. No.	O. No.	O. and G. No. O. Yes.	Patent.	Œstrogen.	Yes.	Fifteen months.	
R.F.	Primary.	Fertile.	—	—	Fimbria.	G. No.	G. No.	O. Yes.	Patent stenosis.	Œstrogen.			
T.V.	Primary.	Fertile.	Cervicitis.	—	Left fimbria, right cornua.	O. No.	G. Yes.	O. Yes.	Patent.	Œstrogen.	Yes.	Five weeks.	Miscarriage.
B.E.	Secondary.	Fertile.	Cervicitis.	I. Mc.	Fimbria.	G. No.	G. No.	G. No.	Blocked.	Œstrogen.			Patent after salpingostomy.
B.R.	Primary.	Fertile.	Cervicitis.	—	Fimbria.	O. and G. No.	O. and G. No.	O. and G. No. O. Yes.	Patent.	Œstrogen.			
C.M.	Secondary.	Fertile.	Cervicitis.	I. Mc.	Left fimbria, right cornua.	G. Yes.	G. No.	G. Yes.	Patent.	Œstrogen.	Yes.	Eighteen months.	Miscarriage.
H.G. ..	Secondary.	Fertile.	Hypoplasia.	I. Mc.	Cornua.	O. No.	O. No.	O. No.	Blocked.	Œstrogen.			
P.A.	Secondary.	Fertile.	Cervicitis.	Ectopic pregnancy.	Left fimbria, right removed.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			Salpingostomy; tubes not patent after.
O.E.	Secondary.	Subfertile.	Acute appendicitis.	S. Mc.	Left cornua, right fimbria.	G. No.	G. Yes.	O. Yes. G. Yes.	Patent.	Œstrogen.			Adhesions at right fimbrial end.
S.O.	Primary.	Fertile.	Cervicitis.	—	Fimbria.	G. No.	G. Yes.	O. Yes.	Patent.	—			
C.E. ..	Secondary.	Fertile.	Fixed retroversion.	Mc.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.	Yes.	Twenty-one months.	
Mc.I.M. ..	Secondary.	Fertile.	Retroversion.	—	Cornua.	G. No.	G. No.	G. No.	Blocked.	Œstrogen.			
D.B.L. ..	Secondary.	Subfertile.	Retroversion.	Septic Mc.	Fimbria.	G. Yes.	O. and G. Yes.		Patent.	—			
H.L.	Primary.	Fertile.	Retroversion.	Unknown.	Fimbria.	G. No.	G. Yes.	G. Yes. O. Yes.	Patent.	Œstrogen.	Yes.	Fourteen months.	
B.M. ..	Secondary.	Subfertile.	—	Acute appendicitis.	Fimbria.	G. Yes.	O. Yes.		Patent.	Œstrogen.			Extratubal disease.
M.T.	Secondary.	Fertile.	Cervicitis, Nabothian cysts.	Septic Mc. I. Mc.	Isthmus.	G. No.	G. No.	G. and O. No.	Blocked.	Œstrogen.			
B.U.	Primary.	Fertile.	Fixed retroversion.	Severe appendicitis.	Fimbria.	G. No.	G. No.	G. No.	Blocked.	Œstrogen.			
G.J.	Primary.	Fertile.	—	Unknown.	Isthmus.	G. No.	G. Yes.	O. and G. Yes.	Blocked.	Œstrogen.			
H.M. ..	Secondary.	Fertile.	Endometrosis.	Appendicitis, ovarian cyst removed.	Cornua.	G. No.	G. No.	G. No.	Blocked.	Dienœstrol.			
K.H. ..	Secondary.	Subfertile.	Cervicitis.	I. Mc.	Left cornua, right fimbria.	G. stenosed.	G. Yes.	O. Yes.	Patent.	Œstrogen.			
McN.	Secondary.	Fertile.	Cervicitis.	I. Mc.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
C.T.	Primary.	Subfertile.	Cervicitis.	Unknown.	Fimbria.	G. Yes.	—	—	Patent.	Œstrogen.			
A.V. ..	Primary.	Subfertile.	—	—	Fimbria.	G. No.	O. No.		Blocked.	Œstrogen.			
Mc.D.E. ..	Primary.	Fertile.	Retroversion.	—	Cornua.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
C.T.	Primary.	Fertile.	Cervical polypus.	Unknown.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
H.M. ..	Secondary.	Fertile.	Right tube removed.	Ectopic pregnancy.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
P.V.	Secondary.	Subfertile.	Retroversion.	Mc.	Right cornua, left fimbria.	G. No.	G. No.	O. and G. No.	Blocked.	Œstrogen.			
H.D. ..	Secondary.	Fertile.	Erosion.	I. Mc.	Hydrosalpinx.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
M.S.	Secondary.	Subfertile.	Cyst right tube, ovary removed.	—	Left hydrosalpinx.	G. No.	G. Stenosis, patent 120 and 170 millimetres.	Stenosis, oil.	Patent, stenosis.	Œstrogen.			

[1] I. Mc. — induced miscarriage; S. Mc. — spontaneous miscarriage; Mc. — miscarriage; G. No — gas, non patency; G. Yes — gas, patency; O. No — oil, non patency; O. Yes — oil, patency.

TABLE I.—*Continued.*

H.D. ..	Secondary.	Fertile.	Erosion.	I. Mc.	Hydrosalpinx.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.				
M.S.	Secondary.	Subfertile.	Cyst right tube, ovary removed.	—	Left hydrosalpinx.	G. No.	G. Stenosis, patent 120 and 170 millimetres.	Stenosis, oil.	Patent, stenosis.	Œstrogen.				

[1] I. Mc. = induced miscarriage; S. Mc. = spontaneous miscarriage; Mc. = miscarriage; G. No = gas, non patency; G. Yes = gas, patency; O. No = oil, non patency; O. Yes = oil, patency.

TABLE I.[1]—*Continued.*

Analysis of Treatment of Blocked Fallopian Tubes: 124 Cases.—Continued.

Patient's Initials.	Primary or Secondary Sterility.	Other Factors.		Presumed Ætiology of Block.	Site of Block.	When was Tube Patent.			Result.	Accessory Treatment (Diathermy or Œstrogen.)	Pregnant or Not.	Latent Period.	Comment.
		Male.	Female.			Test I.	Test II.	Test III.					
C.M.	Primary.	Fertile.	—	Unknown.	Left cornua.	G. No.	G. No.	O. No.	Patent.	Œstrogen.			
S.K.	Secondary.	Fertile.	Retroversion.	I. Mc.	Cornua.	G. No.	O. Yes.	O. Yes. —	Patent.	Diencestrol.			
A.S.	Secondary.	Fertile.	—	Subacute appendicitis. I. Mc., right oöphorectomy.	Cornua.	O. No.	G. No.	G. No. G. No. O. No.	Blocked.	Diencestrol.			
H.L.	Primary.	Subfertile.	—	Appendicitis.	Left cornua, right isthmus.	G. No.	O. No.	G. No. G. No.	Blocked.	Diencestrol.			
G.J.	Secondary.	Fertile.	Retroversion.	Acute appendicitis, pelvic abscess, right salpingectomy.	Left cornua.	G. No.	G. No.	O. No. G. No. G. No.	Blocked.	Diencestrol.			
P.B.	Primary.	Fertile.	—	—	Cornua.	G. No.	G. No.	O. No.	Blocked.	Diencestrol.			
M.D. ..	Secondary.	Fertile.	Right ectopic pregnancy.	—	Cornua.	G. No.	G. No.	O. No. G. No.	Blocked.	Diencestrol.			
W.M. ..	Primary.	Subfertile.	Appendicitis.	—	Cornua.	G. No.	G. No.	O. No.	Blocked.	Diencestrol.			
M.W. ..	Secondary.	Fertile.	—	Mc.	Cornua.	G. No.	G. No.	G. No. O. Yes.	Patent.	Diencestrol.	Yes.	Four years.	
B.E.	Primary.	Fertile.	—	—	Right cornua, left blocked halfway.	G. No.	G. No.	O. No.	Blocked.	Diencestrol.			
W.D.	Secondary.	Fertile.	Hypoplasia.	Acute appendicitis.	Left cornua, right isthmus.	G. No.	G. No.	G. No.	Blocked.	Diencestrol.			
H.E. ..	Primary.	Fertile.	—	—	Cornua.	G. No.	G. No.	G. No. O. Yes.	Patent.	Diencestrol.			
C.P.	Primary.	Fertile.	—	—	Cornua.	G. No.	G. No.	G. No. O. No.	Blocked.	Diencestrol.			
M.D. ..	Secondary.	Fertile.	—	I. Mc.	Hydrosalpinx.	G. No.	O. No.	O. No.	Blocked.	Diencestrol.			
B.M. ..	Primary.	—	—	Acute appendicitis.	Hydrosalpinx.	G. No.	O. No.	G. No. G. No. O. No.	Blocked.	Diencestrol.			Salpingostomy after treatment failed.
C.O. ..	Primary.	Subfertile.	—	Appendicitis, peritonitis.	—	G. No.	G. No.	O. Yes. G. No.	Patent.	Diencestrol.			
L.J.	Primary.	Fertile.	Cervicitis.	—	Cornua.	O. No.	G. No.	G. Yes. G. Yes.	Patent.	Diencestrol.			
K.T.	Primary.	Fertile.	Cervicitis.	Acute appendicitis, right oöphorectomy.	Cornua.	G. No.	O. No.	O. No.	Blocked.	Diencestrol.			
S.R. ..	Secondary.	—	Erosion.	Septic Mc.	Right block, left isthmus.	G. No.	G: No.	G. No. O. No.	Blocked.	—			Trinitrite.
C.M.	Primary.	Subfertile.	—	Acute appendicitis.	Cornua.	G. No.	O. No.	G. No.	Blocked.	Diencestrol.			Trinitrite and "Pethidine".
M.S.	Primary.	Subfertile.	—	Gonorrhœa.	Fimbria.	G. Yes.	G. Yes.	O. Yes.	Patent.	Œstrogen.			
A.P.	Secondary.	Subfertile.	—	Ectopic pregnancy.	Fimbria.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
A.H. ..	Secondary.	Subfertile.	—	Mc.	Fimbria.	G. No.	G. Yes.	O. Yes.	Patent.	—	Yes.	Six months.	Normal infant.
A.M. ..	Secondary.	Subfertile.	—	Mc.	Fimbria.	G. Yes.	—	O. Yes.	Patent.	—	Yes.	Six months.	Right ectopic pregnancy.
A.M. ..	Secondary.	Subfertile.	—	Ectopic pregnancy.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Œstrogen.			
M.S.	Primary.	Fertile.	Erosion.	—	Fimbria.	G. No.	G. No.	O. Yes.	Patent.	Œstrogen.	Yes.	Two months.	
K.W. ..	Primary.	Fertile.	—	—	Fimbria.	G. No.	G. No.	O. Yes.	Patent.	Œstrogen.	Yes.	Three months.	
J.N. ..	Primary.	Fertile.	—	Appendicitis.	Fimbria.	G. No.	G. No.	G. No.	Blocked.	Diathermy.			
S.S. ..	Primary.	—	—	—	Fimbria.	G. No.	G. Yes.	O. Yes.	Patent.	Œstrogen.			
J.S.	Primary.	Fertile.	—	Tuberculosis.	Fimbria.	G. No.	G. No.	O. No.	Blocked.	Diathermy.			
E.P.	Secondary.	Fertile.	—	Ectopic pregnancy.	Isthmus.	G. No.	G. No.	O. No.	Blocked.	Diathermy.			
I.D.	Primary.	Subfertile.	Erosion.	—	Left cornua, right fimbria.	G. No.	G. No.	O. No.	Blocked.	Diathermy.			
B.C. ..	Secondary.	Fertile.	—	Mc.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Diathermy.			
C.C.	Secondary.	Fertile.	—	Mc.	Cornua.	G. Yes.	O. Yes.	—	Patent.	Œstrogen.			
V.J.	Primary.	Subfertile.	—	Salpingitis.	Cornua.	G. No.	G. No.	O. No.	Blocked.	Diathermy.			
W.D.	Secondary.	Subfertile.	—	Mc.	Fimbria.	G. No.	G. No.	O. No.	Blocked.	Diathermy and œstrogen.			
G.B.	Primary.	Fertile.	—	Appendicitis.	Left isthmus, right fimbria.	G. No.	G. Yes.	O. Yes.	Patent.	Œstrogen.			
K.B. ..	Secondary.	Fertile.	—	Mc.	Fimbria.	G. No.	G. Yes.	O. Yes.	Patent.	Œstrogen.			

[1] I. Mc. = induced miscarriage; S. Mc. = spontaneous miscarriage; Mc. = miscarriage; G. No = gas, non patency; G. Yes = gas, patency; O. No = oil, non patency; O. Yes = oil, patency.

Other authors have recorded smaller series. E. Von Graff[2] recorded 70 implantations followed by 23 pregnancies. V. Bonney[3] reported 18% of pregnancies following salpingostomy on selected patients, an overall figure of about one in six. Green-Armytage[4] performed 25 salpingostomies and four pregnancies resulted, or one pregnancy for about every six operations. Solomons[5] recorded that he had performed 366 plastic operations and 30 of the patients became pregnant, about one pregnancy for every 12 operations. Rubin[11] reports 23 salpingostomies with four successes.

The usual overall chance of a successful outcome in a large series is thus somewhere between 5% and 10%, nearer the former figure than the latter, and this figure becomes the yardstick against which other means of treating blocked tubes must be measured. At the same time, one must bear in mind the probability that patients submitted to these plastic operations have been carefully chosen so that the results do not represent what total success these authors had in all the patients who consulted them owing to tubal occlusion.

Incidence of Blocked Fallopian Tubes.

In our public clinic the incidence of blocked Fallopian tubes is between 25% and 30%.[10] In private practice one finds that the incidence of this sterility factor is lower and in the vicinity of 15% to 20%.

Details of the Technique Employed in this Investigation.

The conditions under which this experimental investigation was carried out were as follows. (i) All patients had suffered from sterility for over one year without having used any contraceptives. (ii) All patients had blockage of both tubes or of their one remaining tube. (iii) No choice of patients was made except for the exclusion of those noted in (vi) below. We have found by now that our results would have been much better if we had excluded patients exhibiting a cornual obstruction. (iv) Occlusion of the tubes was the major sterility factor present in the married couple, but not the only one. (v) The standard adopted for a criterion of making the diagnosis was that the tubes should be impermeable to gas after several attempts at one sitting and also that they were proved impermeable to oil at a separate and subsequent test. (vi) Patients with an adnexal mass or subacute sepsis were excluded.

On about 15% of occasions the tubes were proved to be blocked according to the Rubin's test, but were subsequently open when iodized oil was used. (The error of Rubin's test was therefore 15%.) These cases probably represent tubal spasm of a transitory type. The incidence of persistent tubal spasm in our series is recorded below.

We are aware that we are open to criticism here as to what criteria and how many tests are required before one should consider tubes to be blocked. In our opinion, however, any tubal patency tests in addition to those mentioned above really do not constitute a testing of the tubes, but an inadvertent treatment of blocked tubes by repeated insufflation or oil injection.

Tubal Spasm.

We consider that the number of tests used for diagnosis eliminates the possibility that tubal spasm was mistaken for tubal block. It is now the practice, if the primary Rubin's test and hysterogram reveal tubal blockage, to repeat utero-tubal insufflation with pethidine premedication and glyceryl trinitrite.

John Stallworthy,[12] in analysing 1000 clinic cases, found the tubal occlusion rate to be 21%, but on becoming more interested in the subject of spasm and after using nitro-glycerine, he obtained a corrected rate of 12·8%. In a report on 171 cases his raté was 9%.

Isodor Rubin[13] reported 97 cases of spasm in 2014 cases of primary sterility, or a rate of 4·81%, and in 186 cases of secondary sterility 37, or a rate of 3·12%.

In an analysis of the cases at the sterility clinic of the Women's Hospital, Crown Street, 20 cases of persistent spasm were detected in 804 investigations, or a rate of approximately 2·48%.

The Technique of Gas Injections for Treatment.

The gas used was carbon dioxide, and it was administered with Sharman's modification of Bonnet's kymograph. The gas was regulated to flow at 65 millilitres per minute, and the pressure was taken up to the maximum of 250 millimetres of mercury. Two such insufflations were given ten to twelve days after the conclusion of menstruation in separate months.

We are at present using an apparatus of our own design which gives a pressure of over 300 millimetres of carbon dioxide.

Technique of Iodized Oil Injections for Treatment.

The third injection was made with iodized oil one month later. The injection of oil was given at a pressure of 250 to 300 millimetres of mercury, in the X-ray department of the hospital. An X-ray film was taken at the time, and another plain X-ray film two days later.

Hamblen[11] uses oil injections alone in the treatment of tubal blocking, but gives no details of his cases.

Accessory Treatment.

As will be seen from Tables I and III, some patients had pelvic diathermy at the same time, starting at the conclusion of the menstrual period and given every third day until the injection was made. A great number of patients had œstrogens administered daily from the termination of the menstrual period until the time of the pressure treatment. The rationale of these accessory treatments will be found in the work of Clauberg,[6] of Moore White[7] and of Mintz.[8] The accessory use of œstrogens was recently mentioned also in a paper by Rubin.[9]

Comment.

This work is experimental, and we propose to continue until we have collected a sufficiently large number of

TABLE II.

Patient's Initials.	Primary or Secondary Sterility.	Duration of Sterility. (Years.)	Presumed Ætiology of Block.	Site of Block.	Rubin's Test (I).	Rubin's Test (II).	Oil Test.	Extra Tests.	Result.	Pregnant or Not.	Latent Period.	Comment.
S.R.	Secondary.	Four.	Miscarriage.	Fimbria.	Blocked.	Patent.	Patent.	Nil	Patent.	—	—	Flared up after last oil test.
F.D.	Secondary.	Three.	Left ectopic pregnancy.	Fimbria.	Blocked.	Patent.	—	2 Gas	Patent.	—	—	
L.C.	Secondary.	Four.	Placental polypus.	Fimbria.	Patent.	Patent.	—	3 Gas.	Patent.	Yes.	Three months.	
J.G.	Secondary.	Four.	Miscarriage.	Right hydrosalpinx, left fimbria.	Blocked.	Blocked.	Blocked.	Gas.	Patent.	—	—	Also has anovulation.
D.H.	Primary.	Four.	Pneumonia as girl.	Left hydrosalpinx, right fimbria.	Blocked.	Blocked.	—	Gas.	Stenosed.	—	—	
A.K.	Primary.	Six.	Lipiodol, salpingitis.	Fimbria.	Blocked.	Patent.	—	—	Patent.	Yes.	—	
L.C.	Primary.	One.	Acute appendicitis.	Fimbria.	Blocked.	Blocked.	—	Gas.	Stenosed.	Yes.	—	Miscarriage.
M.W.	Primary.	Two.	Nothing known.	Fimbria.	Blocked.	Patent.	—	—	Stenosed.	—	—	

TABLE III.

Patient's Initials.	Other Sterility Factors.	Presumed Ætiology of Block.	Accessory Treatment, Œstrogen.	Result.	Pregnant or Not.	Comment.
C. ..	—	Unknown.	Stilbœstrol.	Patent.	Yes.	Normal infant.
M.D. ..	—	Miscarriage.	Œstroform.	Patent.	Yes.	Normal infant.
G.D. ..	—	Puerperal sepsis at seven weeks.	Œstroform.	Blocked.		
D.N. ..	—	—	Œstroform.	Patent.	Yes.	Normal infant.
P.M. ..	Cervicitis.	Salpingitis.	Œstroform.	Patent, stenosis.		
W.R. ..	—	Septic miscarriage.	Œstroform.	Blocked.		
W.H. ..	—	Acute appendicitis, septic miscarriage.	Œstroform.	Blocked.		
M.C. ..	—	Septic miscarriage.	Œstroform.	Patent.		Second course of treatment succeeded.
C.M. ..	Hypoplasia.	—	Œstroform.	Blocked.		
S.M. ..	Hypoplasia (subfertile husband).	—	Stilbœstrol.	Patent.		
S.V. ..	—	—	Œstroform.	Patent.	Yes.	Normal infant.
G.S. ..	Hypoplasia.	—	Œstroform.	Patent, stenosis.		
E.J. ..	Hypoplasia.	—	Œstroform.	Patent, stenosis.		
P.E. ..	—	Acute appendicitis, septic miscarriage.	Œstroform.	Patent, stenosis.		
W.P. ..	—	Acute appendicitis, right salpingectomy.	Œstroform.	Blocked.		
C.D. ..	Hypoplasia.	—	Œstroform.	Blocked.		Adopted baby.
C.V. ..	—	Septic miscarriage.	Stilbœstrol.	Blocked.		
P.M. ..	—	Cause unknown.	Œstroform.	Patent.		
C.L. ..	—	Septic miscarriage.	Srilbœstrol.	Blocked.		
M.D. ..	—	Miscarriage.	Stilbœstrol.	Patent.		
C.J. ..	Occasional anovulation.	—	Œstroform.	Patent.		
W.D. ..	—	Septic miscarriage.	Stilbœstrol.	Blocked.		
H.L. ..	Hypoplasia.	—	Stilbœstrol.	Patent.		
H.E. ..	—	Septic miscarriage.	Stilbœstrol.	Blocked.		
B.F. ..	Occasional anovulation.	—	Œstroform.	Blocked.		
C.V. ..	—	Septic miscarriage.	Stilbœstrol.	Blocked.		
M.	—	Cause unknown.	—	Patent.	Yes.	Normal infant.
N.M. ..	—	—	—	Patent.	Yes.	Normal infant.
Mc.G.P. ..	—	Acute appendicitis.	Stilbœstrol.	Blocked.		
K.E. ..	Fibroid tumour.	—	Stilbœstrol.	Blocked.		
R.P. ..	—	Right tube removed, salpingitis.	Stilbœstrol.	Blocked.		
L.J. ..	—	Puerperal sepsis.	Stilbœstrol.	Blocked.		
A.T. ..	—	Acute appendicitis.	Stilbœstrol.	Patent.	Yes.	Cæsarean section for disproportion.
C.B. ..	—	Septic miscarriage.	Stilbœstrol.	Blocked.		
B.A. ..	—	Puerperal sepsis.	Stilbœstrol.	Blocked.		
W.H. ..	—	—	Stilbœstrol.	Blocked.		
V.G. ..	Cystic ovary.	—	Stilbœstrol.	Patent.		
W.M. ..	Hypoplasia.	—	Stilbœstrol.	Patent.		
A.S. ..	—	—	—	Patent.	Yes.	Normal infant.
S.E. ..	—	Miscarriage.	Stilbœstrol.	Blocked.		

cases to warrant some definite conclusion. Previous papers have been published on these lines, but the series of cases was smaller and the pressures used were of a lower order.

We used the highest pressure of carbon dioxide our machine would deliver (250 millimetres), encouraged by the fact that we were unable to discover any record in the literature of a fatality during the use of this gas.

We approached the use of iodized oil with more circumspection. Our experience in performing 2500 iodized oil injections in the sterility clinic without a fatality had reassured us that in properly selected cases it appeared to be safe.[1] We would have preferred some other medium, but none is obtainable in this country (for example, "Viscorayopake" may be better).

It will be seen from a perusal of Tables I, II and III that the results would have been much improved if some selection of patients had been practised in the first place, and particularly if patients exhibiting cornual blockage had been excluded. During the treatment one-third of the patients failed to complete the course, so we have been compelled to omit them in compiling the table.

Conclusion.

We have treated 124 patients suffering from blocked Fallopian tubes according to the standard which has been defined. These patients were unselected except for the exclusion of those with pelvic masses or subacute sepsis.

Of these patients 53 developed satisfactory tubal patency, and a further nine progressed from a total tubal blockage to tubal stenosis.

[1] The iodized oil used in these tests was usually "Non-Viscous Neo Hydriol" (May and Baker, London). This preparation is not entirely "non-viscous", but very much less so than the usual lipiodol.

The ultimate number of pregnancies has been 23 to date (that is, one in 5·4), of which two were ectopic gestations and three ended in miscarriages. Of those patients who finally developed patent tubes, 23 out of 53 became pregnant as a result of this non-operative procedure.

Up to the present time we have experienced no fatalities and no anxious moments.

We are encouraged to proceed with this technique as the results to date are more successful than the figures published by Greenhill in his collected group of 818 plastic operations, most of which were probably performed on critically selected patients.

The results of such an investigation as this must of necessity accumulate slowly, as each patient has had at least five tubal insufflations or injections of oil performed during the course of the treatment, amounting to about 600 such procedures in this series.

Plastic operations on patients with blocked tubes are usually performed only in selected cases that have been meticulously chosen. It is our opinion that the non-operative pressure treatment described in this paper would yield unequivocably superior results to plastic operations on such carefully appraised patients, because in the group we have treated there were a number with subfertile male partners, cervical hostility, hypoplasia and other complicating factors.

In spite of these items which militated against us, the overall success has been somewhat better than that usually achieved by plastic operations on the uterine tubes. With a selected group of patients we are confident of obtaining much more favourable results in the future.

References.

(a) J. P. Greenhill: "Office Gynecology", 1939, page 119.
(b) E. Von Graff: "Operative Treatment of Female Sterility (Tubal Implantation)", *The Journal of the Iowa Medical Society*, Volume XXVI, 1936, page 31.

(3) V. Bonney: "The Fruits of Conservatism", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume XLIV, 1937, page 1.
(4) V. B. Green-Armytage: "Sterile Mating", *The Lancet*, Volume II, 1936, page 426.
(5) B. Solomons: "Sterility, with Special Reference to Surgical Possibilities", *Surgery, Gynecology and Obstetrics*, Volume LX, 1935, page 352.
(6) C. Clauberg: *"Künstlich erzeugtes Tubenwachstum ein mitbedingender Faktor bei der Behebung von Sterilität durch Follikelhormon"*, *Zentralblatt für Gynäkologie*, Volume LXII, 1938, page 1034.
(7) M. Moore-White: "The Effects of Follicular Hormone on Non-patent Fallopian Tubes", *British Medical Journal*, Volume I, 1940, page 342.
(8) M. E. Mintz: "Treatment of Obstructed Fallopian Tubes in Sterility by Diathermy and Tubal Insufflation", *The American Journal of Obstetrics and Gynecology*, Volume XXXIV, 1937, page 93.
(9) I. C. Rubin: "Proceedings of the Conference on Diagnosis in Sterility", edited by E. T. Engle, 1946, page 199.
(10) A. Grant: "Effort and Result in Sterility—An Audit of 407 Cases", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1945, page 134.
(11) E. C. Hamblen: "Endocrinology of Woman", First Edition, 1945, page 519.
(12) J. Stallworthy: *British Medical Journal*, Volume II, 1947, page 308.
(13) I. C. Rubin: "Utero-Tubal Insufflation", 1947, page 224.
(14) I. C. Rubin: "Utero-Tubal Insufflation", 1947, page 284.

MALIGNANT DISEASE OF THE TESTIS.[1]

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IN the words of Gordon Gordon-Taylor and A. S. Till the purpose of this paper is not "to keep aflame the embers of an everlasting discussion as to the exact pathological nature of tumours of the testicle". I propose to restrict myself to a presentation of the classification recently adopted by the United States Army Institute of Pathology and to a brief account of the treatment carried out by the Urologic Service of the Walter Reed Hospital, Washington, D.C.

This communication is based upon a series of almost one thousand cases of testis tumour occurring in American service personnel during World War II, reviewed at the forty-first annual meeting of the American Urological Association, at Cincinnati, Ohio, on July 25, 1946.

The confusion of thought which has for so long been apparent in the treatment of tumours of the testicle can be attributed to their low incidence and to the perplexing variations of different classifications. And if treatment be not soundly based upon pathology, it cannot be rational.

Owing to the establishment of tumour centres, the Urologic Service of the Walter Reed Hospital, drawing on some ten millions of service personnel, was enabled to study and treat almost one thousand patients with testis tumour during World War II. Full use of this unique opportunity by the United States Army Institute of Pathology has resulted in a more practical classification, and in a plan of attack based upon the histology of the particular neoplasm.

Treatment at the commencement of this series was simple orchidectomy followed by irradiation of the retroperitoneal areas. Each patient received a dosage limited solely by skin tolerance, usually up to 6000*r* to 8000*r*. Late sequelæ presented the melancholy picture of fibrosis of the abdominal wall and of gastric ulceration with hæmatemesis. Lewis,[13] reviewing 250 cases in this series, noted twelve instances of pyloric or intestinal obstruction and three deaths from peritonitis following rupture of the bowel.

After 1942 each tumour received a preliminary course of irradiation, the effect of which was assessed after orchidectomy had been performed. After correlation of these findings with those following irradiation of metastases, the conclusion was formed that 3000*r* units through five portals gave adequate dosage for seminoma, that 5000*r* might suffice for embryonal carcinoma, but that trophoblastic elements must be considered completely radio-resistant because the lethal tumour dose was beyond human tolerance.

Thus a definite plan of attack was evolved, based upon the degree of radio-sensitivity or upon the complete radio-resistance of the neoplasm. All patients with tumours containing radio-resistant elements were submitted to the radical operation after a careful clinical and radiographic search had been made for metastases, special attention being directed to the renal tracts, as outlined by pyelography.

Classification of Tumours of the Testis.

The following is the classification of tumours of the testis recently adopted by the United States Army Institute of Pathology.[3] All neoplasms are considered to belong to one of two groups, the complex teratomata, or the monocellular tumours, comprising the seminomata and carcinomata. The following main structural types are described.

1. Teratoma. Teratoma is characterized by an often confusing picture of structures derived from all three primary germinal layers. Epithelial masses, glands, cysts, muscled epithelial tubes, cartilage and ganglionic elements may all appear in complex array. In the absence of recognizable malignant components the term "adult" may be used, but the designation "benign" should be discarded because of the ease with which carcinomatous nests may be missed in a large tumour. There have been many reported instances of metastases in such cases, the most famous, perhaps, being the so-called "pure chondroma" with fatal secondary deposits reported by Sir James Paget in 1855, which investigators some forty years later showed to be a teratogenous carcinoma with cartilaginous changes in the stroma.[3]

2. Seminoma. Seminoma is made up of rounded polyhedral cells often with clear cytoplasm. The nuclei, which are outlined by a membrane, and the nucleoli, are centrally placed. The typical picture is of unorganized masses and cords of these remarkably uniform cells, with practically no attempt to form differentiated glandular epithelial structures.

3. Embryonal Carcinoma. The cells are larger and the nuclei do not exhibit the orderly pattern of the seminoma. Frankly epithelial cells, often cuboid or columnar, form both differentiated glandular structures and solid epithelial sheets. There may be considerable variation in cellular type in different tumours and in different parts of the same tumour. The single outstanding feature is the resemblance to cytotrophoblastic tissue. Indeed, syncytial trophoblastic elements often appear in this tumour, and the urine may contain considerable amounts of chorionic gonadotropin, facts which support the view that embryonal carcinoma is a cytotrophoblastic tumour.

4. Chorioepithelioma. Chorioepithelioma duplicates the structure of placental villi—compactly grouped cytotrophoblastic cells with giant multinucleated syncytial structures grouped around their borders. This tumour is usually associated with teratoma or teratocarcinoma, is of characteristically hæmorrhagic appearance and produces a high urinary hormone output.

5. Teratocarcinoma. Teratocarcinoma is a combination of teratoma and seminoma, embryonal carcinoma or chorioepithelioma.

6. Interstitial Cell Tumour. The interstitial cell tumour is probably not malignant, as all the patients in this group are still alive. The cells resemble those of Leydig or those of the adrenal cortex. Of clinical interest is a "functioning" tumour in this series in a boy, aged six years, who had frequent erections and axillary and pubic hair, and who smoked cigars and exhibited other advanced male characteristics. Since the right testis was larger than the left, it was removed because of the possibility of tumour. The main symptoms then regressed. Microscopically the neoplastic cells resembled interstitial cells.

The Aschheim-Zondek Test.

Before I proceed to a consideration of the radical operation, brief reference will be made to the Aschheim-Zondek test in so far as it may be expected to help in the diagnosis and prognosis of this disease.

[1] Read at the eighth annual meeting of the Urological Society of Australasia on April 27, 1947, at Sydney.

Ferguson,[4] in 1933, claimed to have established an accurate parallel between the histological structure of the tumour and the urinary hormone content, his figures being as follows:

Adult teratoma ..... 50 to 500 mouse units per litre
Seminoma ..... 400 to 2000 mouse units per litre
Embryonal carcinoma .. 2000 to 10,000 mouse units per litre
Chorioepithelioma .... 10,000 to 40,000 mouse units per litre
All other affections of the testis .. less than 50 units per litre

As no classification of the pathological histology of the testis has attained universal acceptance, and as there is considerable variation in the enthusiasm devoted to the preparation and examination of serial sections of each tumour, it is not surprising that Twomby, Temple and Dean[5] were unable to confirm these results. However, they considered the test of great value in prognosis, and gave the following figures: of patients passing 1000 mouse units per litre of urine, 77% survived; of patients passing 1000 to 2000 mouse units per litre of urine, 43% survived; of patients passing 2500 mouse units per litre of urine, 18% survived; of patients passing 10,000 or more mouse units per litre of urine, all are dead.

It is presumed that these figures cover a five-year period. We must therefore accept the performance of repeated Aschheim-Zondek tests as routine procedure in the management of malignant disease of the testis.

The hormonal relationship of various testicular lesions has been briefly summarized by Wyndham.[6]

The Radical Operation.

In 1925 Dew[7] published his classic monograph "Malignant Disease of the Testicle", in which is given a complete review of the subject up to that time, and in which the operation is described in some detail. This procedure demands a block dissection of the lymph drainage system of the testis to the level of the renal vessels, metastases above this level rendering the condition inoperable. It may, perhaps, be pointed out here that collateral branches of the thoracic duct open into an independent prevertebral trunk which is joined to the duct at its two extremities only, the trunk terminating above in the jugulo-subclavian junction or in a node of the transverse cervical chain. The significance of a secondary deposit in the supraclavicular node, therefore, is that a chain of metastatic deposits probably exists along the course of the thoracic duct.

Lewis,[1] of the Walter Reed Hospital, who has possibly had greater experience of the major operation than any other surgeon, is quite convinced that the radical procedure is indicated, in the absence of widespread metastases, in the case of all tumours except seminoma. He makes the following further statement:

> I am strongly inclined to limit irradiation of testis tumour to the dosage lethal to seminoma and to give that only when seminoma cells are present in a typical seminoma or when seminoma cells are present in a teratoma.

On the other hand, Barringer,[8] reviewing the histories of 69 patients not submitted to the radical operation, states that in the seminoma group 56%, 29% with metastases, are alive after five years, whilst in the so-called "adenocarcinoma" group 83%, 40% with metastases, are alive after five years. However, as 80% of this series are classified as suffering from seminomata, it seems certain that a number of teratocarcinomata have been included with the more radio-sensitive tumours. Further, Barringer states, referring to the high percentage of bilateral metastases in autopsy material, "we would hesitate to say how frequently in the past our irradiation has been confined to one side of the abdomen, certainly in a large percentage of cases". One feels that in such a loosely managed series the available information does not permit a serious challenge to the views of Lewis.

Cairns,[9] in the Hunterian Lecture of 1926, gave as nil the mortality among 19 patients submitted to the radical operation at the London Hospital. Hinman,[10] in 77 personal and collected cases, recorded a mortality of 10%. Lewis[1] (number not specified) recorded no mortality and little morbidity. The eight and a half years survival of one patient after irradiation led Gordon Gordon-Taylor[11] to abandon the major operation.

Comment.

Although the publication of five-year survival figures from the Walter Reed Hospital must be awaited before the radical operation can be placed in proper perspective, it would seem to have a place in carefully selected cases, particularly as this disease occurs in patients of a low and useful age group. So, while confidently awaiting a partial or complete solution of the problem by the endocrinologist, we should be prepared to undertake this major procedure whenever there appears to be a possibility of cure by surgical means.

Summary.

1. A classification of malignant tumours of the testis is presented, based upon a study of almost one thousand cases by the United States Army Institute of Pathology.

2. Treatment of such tumours at the Walter Reed Hospital, Washington, D.C., is briefly described.

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References.

(1) L. G. Lewis: Personal communication.
(2) J. E. Ash and N. B. Friedman: "Atlas of Genitourinary Pathology", 1946.
(3) Kanthack and Prigg: *Transactions of the London Pathological Society*, 1897, page 150; quoted by H. R. Dew, *loco citato*.
(4) R. S. Ferguson: "Quantitative Behaviour of Prolan A. in Teratoma Testis", *The American Journal of Cancer*, Volume XVIII, 1933, page 269.
(5) G. H. Twombly, H. M. Temple and A. L. Dean: "Clinical Value of the Aschheim-Zondek Test in the Diagnosis of Testicular Tumors", *The Journal of the American Medical Association*, Volume CXVIII, 1942, page 106.
(6) N. Wyndham: "Surgical Pathology of the Testis", *The Australian and New Zealand Journal of Surgery*, Volume XVII, 1947, page 52.
(7) H. R. Dew: "Malignant Disease of the Testicle", 1925.
(8) B. S. Barringer: "Prognosis in Teratoma Testis", *Transactions of the American Association of Genito-Urinary Surgeons*, Volume XXXVII, 1944, page 197.
(9) H. W. B. Cairns: "Neoplasms of the Testicle", *The Lancet*, Volume I, 1926, page 845.
(10) F. Hinman: "Tumors of Testis: Five Year Cures following Radical Operation", *Surgery, Gynecology and Obstetrics*, Volume LVI, 1933, page 450.
(11) G. Gordon-Taylor and A. S. Till: "Malignant Disease of the Testicle", *The British Journal of Urology*, Volume X, 1938, page 1.
(12) H. Rouvière: "Anatomy of the Human Lymphatic System", 1938; quoted by B. S. Barringer, *loco citato*.

LISTERIA MENINGITIS: A DESCRIPTION OF A STRAIN OF LISTERIA MONOCYTOGENES AND A REPORT OF A CASE.

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A STRAIN of *Listeria monocytogenes* was recently isolated from a case of purulent meningitis. As far as the writer is aware, this organism has not before been isolated and identified in this country. The patient, a female, aged seventy-nine years, was admitted to hospital on March 1, 1948, suffering from pneumonia. The patient had been well three days prior to her admission to hospital. Fever and diarrhœa, followed by vomiting, epigastric pain and a slight cough then developed. X-ray examination showed consolidation of the base of the right lung. The patient died shortly after her admission. A pure culture of *Listeria monocytogenes* was obtained from the purulent meningitic fluid.

HISTORICAL SURVEY.

Listeria monocytogenes, the causative organism of listeriosis, was first submitted as a new species (*Bacterium monocytogenes*) in 1924 by Murray, Webb and Swann. These workers isolated the organism from guinea-pigs and rabbits during an epizootic amongst laboratory animals at Cambridge. The same organism was recovered by Pirie (1927) from gerbilles in South Africa; he proposed the name *Listerella hepatolytica* for the organism. When he became acquainted with the prior claim of the English workers, the name *Listerella monocytogenes* was adopted. However, the generic name Listerella was disallowed in 1939 by the Third International Congress for Microbiology, on the ground that Jahn in 1906 had already used the name for a mycetozoan. Pirie (1940) subsequently proposed that the name Listeria be substituted.

Listeria meningitis in man was first observed in the United States of America by Burn (1934). The first proven case of listeria infection in Great Britain occurred in 1934 (Gibson 1935); but it was not until 1937 that complete identification of the organism was made by Webb and Barber. There are now on record 15 cases of listeria meningitis (Burn 1934 and 1935, Schultz *et alii* 1934, Carey 1936, Webb and Barber 1937, Poston *et alii* 1937, Wright and MacGregor 1939, Porter and Hale 1939, Handelmann *et alii* 1946); nine of the patients died and six recovered. According to Kaplan (1945), the mortality rate of human listeriosis in its typical meningeal form is approximately 68%, which is lower than earlier figures, as in recent cases treatment with sulphonamide drugs has been successful (Porter and Hale 1939, Wright and MacGregor 1939). Handelmann *et alii* (1946) state that sulphadiazine is the drug of choice in the treatment of listeria infections, although they present evidence associated with only one case.

Clinically the picture is usually one of septicæmia with meningo-encephalitic involvement. However, the symptoms vary. The onset may be sudden or gradual; there may be fever, vomiting, convulsions, neck rigidity and strabismus. In the fatal cases death usually occurs within seven days. The organism is recoverable from the cerebro-spinal fluid, which is invariably turbid. In some non-fatal cases the organism was isolated from the cerebro-spinal fluid for many days (in the Schultz case 120 days after the onset of the disease). Post-mortem findings invariably consisted of suppurative leptomeningitis. The other findings have varied from case to case, but may include focal necrosis and patchy fatty degeneration of the liver, an enlarged spleen, *otitis media* and pneumonia and bronchiolitis.

Little is known concerning the epidemiology of the disease, as too few cases are available to present a clear epidemiological picture. Listeriosis occurs naturally in man and animals (cattle, sheep, swine, rabbits, rats, guinea-pigs and gerbilles). However, insufficient data are available to assess the significance of the part played by animals as a probable reservoir of human infection. The portal of entry of the organism in man is obscure, except, perhaps, in transplacental infection occurring in the newborn (Burn, 1936). Diphtheroid-like organisms have occasionally been isolated from cases of meningitis (Atkinson 1917, Dick 1919, Kessell and Romanoff 1929, Schultz *et alii* 1933 and Gibson 1934). The diphtheroids of Schultz *et alii* and of Gibson were subsequently identified as *Listeria monocytogenes* by Webb and Barber (1937). It is therefore probable, although by no means certain (as proof is lacking and the cultures have been destroyed), that the diphtheroids isolated in cases of meningitis in 1917 by Atkinson were listeria.

The role, if any, of listeria in glandular fever is still to be determined. Although it has been isolated from the blood or cerebro-spinal fluid of nine patients with typical infectious mononucleosis (Nyfeldt 1929, Schmidt and Nyfeldt 1938, Pons and Julianelle 1939 and Webb 1943), other work has indicated that a virus may be the causative agent (Van den Bergh and Liessens 1939). The serum of patients suffering from infectious mononucleosis has been shown to agglutinate listeria suspensions although not to high titre (Webb 1943). This observation has recently been confirmed at this hospital (results unpublished). The more recent studies of Burnet and Anderson (1946) and of Anderson (1947) show that serum from patients with infectious mononucleosis agglutinates red cells treated with preparations of Newcastle disease virus, although in other respects the Paul-Bunnell antibody is distinct from the antibody present in specific Newcastle disease virus immune serum.

EXPERIMENTAL INVESTIGATION.

An experimental investigation of the organism was undertaken, as follows.

Post-Mortem Examination.

Autopsy of the patient who is the subject of this report revealed meningitis, the leptomeninges being moderately congested especially over the lateral surfaces of the cerebral hemispheres. The cerebro-spinal fluid was increased in amount and was turbid. Examination of smears revealed numerous neutrophile polymorphonuclear cells and macrophages in about equal numbers. The brain itself was congested, but showed no other obvious abnormality either to naked eye examination or in microscopic sections.

Macroscopically, the liver was of normal size. Examination of the cut surface revealed congestion, as well as a diffuse mottling which the microscopic sections indicated was due to patchy cloudy swelling. Tissue sections also showed an occasional small inflammatory focus in the portal tracts. The infiltrations consisted of neutrophile and large mononuclear cells (possibly monocytes) in about equal numbers.

Neither the spleen nor the lungs contained any striking abnormality.

Bacteriological Findings.

The bacteriological findings were as follows.

Cultural Characteristics, Morphology and Staining.

The organism grew readily on blood agar plates, as circular, smooth, slightly opaque and flattened colonies, the zones of hæmolysis being greater after forty-eight hours' incubation than after twenty-four hours at 37° C. Growth was not so marked on nutrient agar, MacConkey agar, tellurite agar or Löffler's serum. The growth on Filde's agar was as prolific as that on media containing blood. On primary isolation no rough colonial variants were seen; but cultures made from the heart-blood of an experimentally infected rabbit yielded a few intermediate-type colonies. On subculture, these reverted to the smooth form. Examination of smears of smooth colonies made from blood agar revealed Gram-positive bacilli arranged singly, in pairs, in short chains and in the characteristic V forms. Pleomorphism, more pronounced in liquid than in solid cultures, was indicated by the presence of an occasional filament. Bipolar staining was demonstrable in some smears. The organism stained evenly with methylene blue, was non-sporing, non-capsulated and non-acid-fast. Motility was demonstrated only with great difficulty in young glucose-broth cultures incubated at 22° C.

Biochemical Activity.

The biochemical activity of this strain is identical with that of the majority of strains isolated in other parts of the world. The results of the tests are given in table form and compared with classical strains (see Table I).

Pathogenicity.

The organism was pathogenic for rabbits, mice and guinea-pigs. Of a twenty-four hours' culture in liver infusion (Macleod 1940), 0·5 millilitre injected intravenously into each of three rabbits caused death within forty-four hours. Post-mortem examination revealed fine focal necrosis of the liver. The white mottling was pinhead in size and covered the whole surface of the liver. This is characteristic of the effect of most listeria strains (see Webb, 1943). The organism was recovered from the heart blood and liver of all animals. Intraperitoneal injection of 0·2 millilitre of a twenty-four hour liver infusion culture caused the death of six mice in forty-eight to seventy-two hours. Intraperitoneal injection of

0·5 millilitre of a similar culture into three guinea-pigs caused the death of two animals with characteristic focal necrosis of the liver in five to eight days. The organism was recovered in pure culture from the heart-blood and liver in each instance with the exception of one guinea-pig, which survived.

Anton's Conjunctivitis Test.

The validity of the conjunctivitis test, first reported by Anton (1934), has been confirmed by Julianelle and Pons (1939) and by Julianelle (1940) with more than 20 listeria strains. The response to the test was not given by other organisms (including ten strains of Erysipelothrix). It was suggested that the test is more specific than the production of monocytosis in experimental animals. Conjunctival swabbings were made in two rabbits. One rabbit received a swab taken from a twenty-four hour liver infusion culture. The other rabbit received a swab from the growth on a blood agar plate. Acute conjunctivitis appeared in the latter animal in twenty-four hours. The lids were swollen and stuck together with a thick exudate which contained large numbers of polymorphonuclear as well as mononuclear cells and numerous organisms. Three to four days later, infiltration and vascularization of the cornea were evident. The condition slowly subsided after the tenth day. The rabbit whose eye was inoculated with a swab from the liquid culture developed acute conjunctivitis only after seventy hours.

TABLE I.

Test Substance.	Australian Strain.	Classical Strains.
Glucose	+[1] (early)	+ (early)
Maltose	+ (delayed)	+ (delayed)
Mannite	−[1]	−
Lactose	+ (delayed)	+ (delayed)
Sucrose	−	−
Salicin	+ (early)	+ (early)
Rhamnose	+ (early)	+ (early)
Galactose	−	−
Raffinose	−	−
Xylose	−	v[1]
Starch	−	v
Dextrine	+ (delayed)	+ (delayed)
Glycerol	+ (delayed)	+ (delayed)
Indole	−	−
Methyl red	+	+
Sulphuretted hydrogen	−	−

[1] "+" = acid only, "−" = no fermentation, "v" = variable fermentation.

Production of Monocytosis in Rabbits.

Three rabbits were injected intravenously with 0·1 millilitre of a twenty-four hour liver infusion culture. Total and differential leucocyte counts were performed every twenty-four hours for one week. Pronounced monocytosis developed in each case. The response of one rabbit (which is characteristic of all three animals) is given in Table II.

Sensitivity to Antibiotics.

The antibacterial activity of penicillin, streptomycin, aspergillin (Stanley 1946) and several sulphonamide drugs was determined against this organism growing in charcoal-adsorbed broth (MacLeod and Mirick 1942). The serial dilution method was used and the inoculum consisted of one drop of a twenty-four hour culture in charcoal-adsorbed broth. The antibacterial titre was observed after incubation at 37° C. for twenty-four hours. The results are given in Table III.

The sensitivity of this strain to penicillin is identical with that recorded by Handelmann *et alii* (1946); that is, *Listeria monocytogenes* is approximately twenty times less sensitive than a sensitive strain of *Staphylococcus aureus* to penicillin. The drug to which the organism is most sensitive is aspergillin.

TABLE III.

Drug.	Antibacterial Activity.		
	Units per Millilitre.	Milligrammes per Millilitre.	Dilution.
Penicillin	0·31 (O.U.)[1]	—	—
Streptomycin	6·25 (S.U.)[2]	0·00625	1 in 160,000
Aspergillin	—	0·00019	1 in 5,120,000
Sulphanilamide	—	0·03440	1 in 29,000
Sulphadiazine	—	0·01300	1 in 77,000
Sulphapyridine	—	0·02000	1 in 50,000

[1] Oxford units.
[2] "S" units (of Waksman).

DISCUSSION.

Although no antigenic analysis of the organism described in this paper has been carried out, evidence is presented which undoubtedly classifies it as a strain of *Listeria monocytogenes*. This evidence was based on morphology, growth characteristics, biochemical activity, pathogenicity and post-mortem findings, on the production of monocytosis in experimental animals and on Anton's conjunctivitis test.

It is probable that the organism is more widely distributed throughout the world than the small number of cases cited suggests. The studies of Webb and Barber (1937) and of Webb (1943) indicate that the organism is widespread and capable of producing endemic and epidemic disease in numerous animal species. It is, therefore, likely that cases of listeria infection have remained undiagnosed because (i) the organism has not been isolated, and (ii) the organism, on isolation, has not been identified as *Listeria monocytogenes* (for example, diphtheroid bacilli, *Corynebacterium parvulum, et cetera*).

SUMMARY.

An account is given of a case of meningitis due to *Listeria monocytogenes*. This organism is described for the first time in Australia.

ACKNOWLEDGEMENTS.

The author is indebted to Dr. J. P. O'Brien for a report on the post-mortem examination and to the late Dr. A. E. Platt for his advice in the writing of this paper.

TABLE II.

Time of Count.	Total Leucocytes.[1]	Polymorphonuclear Cells.[1]		Lymphocytes.[1]		Monocytes.[1]	
		Percentage.	Absolute.	Percentage.	Absolute.	Percentage.	Absolute.
Before injection	10,000	31	3100	65	6500	4	400
After 24 hours	7,300	48	3500	49	3600	3	200
After 48 hours	11,000	52	5700	38	4200	10	1100
After 72 hours	12,200	44	5400	35	4300	21	2500
After 96 hours	11,900	55	6500	21	2500	24	2900
After 120 hours	13,300	39	5200	43	5700	18	2400
After 144 hours	11,400	48	5500	36	4100	16	1800

[1] Per cubic millimetre.

BIBLIOGRAPHY.

W. Anton: *"Kritisch-experimenteller Beitrag zur Biologie des Bacterium monocytogenes. Mit besonderer Berücksichtigung seiner Beziehung zur infektiösen Mononukleose des Menschen"*, *Zentralblatt für Bakteriologie*, Volume CXXXI, 1934, page 89.

E. Atkinson: "Meningitis Associated with Gram-Positive Bacilli of Diphtheroid Type", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1917, page 115.

C. G. Burn: "Unidentified Gram-positive Bacillus Associated with Meningo-encephalitis", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XXXI, 1934, page 1095; "Characteristics of a New Species of Genus Listerella Obtained from Human Sources", *Journal of Bacteriology*, Volume XXX, 1935, page 573; "Clinical and Pathological Features of Infection Caused by a New Pathogen of Genus Listerella", *American Journal of Pathology*, Volume XII, 1936, page 341.

B. W. Carey, junior: "Infection with Organism of Genus Listerella: Report of a Case of Acute Cerebrospinal Meningitis with Recovery", *The Journal of Pediatrics*, Volume VIII, 1936, page 626.

G. F. Dick: "A Case of Cerebrospinal Meningitis due to a Diphtheroid Bacillus", *The Journal of the American Medical Association*, Volume LXXIV, 1920, page 84.

H. J. Gibson: "A Pathogenic Diphtheroid Bacillus from a Fatal Case of Meningitis", *The Journal of Pathology and Bacteriology*, Volume XLI, 1935, page 239.

N. I. Handelmann *et alii*: "Listerella Meningitis", *The Journal of Pediatrics*, Volume XXVIII, 1946, page 210.

L. A. Julianelle: "The Function of Listerella in Infection", *Annals of Internal Medicine*, Volume XIV, 1940, page 608.

M. M. Kaplan: "Listerellosis", *The New England Journal of Medicine*, Volume CCXXXII, 1945, page 755.

L. Kessel and A. Romanoff: "General Infection with a Diphtheroid Bacillus Complicated by Diphtheroid Meningitis", *The Journal of the American Medical Association*, Volume XCIV, 1930, page 1647.

C. M. MacLeod: "The Inhibition of the Bacteriostatic Action of Sulphonamide Drugs by Substances of Animal and Bacterial Origin", *The Journal of Experimental Medicine*, Volume LXXII, 1940, page 217.

C. M. MacLeod and G. S. Mirick: "Quantitative Determination of the Bacteriostatic Effect of the Sulphonamide Drugs on Pneumococci", *Journal of Bacteriology*, Volume XLIV, 1942, page 277.

E. G. D. Murray, R. A. Webb and M. B. R. Swann: "Disease of Rabbits Characterised by Large Mononuclear Leucocytosis, Caused by a Hitherto Undescribed Bacillus, Bacterium Monocytogenes (n. sp.)", *The Journal of Pathology and Bacteriology*, Volume XXIX, 1926, page 407.

A. Nyfeldt: *"Étiologie de la mononucléose infectieuse"*, *Comptes rendus des séances de la Société de biologie*, Volume CI, 1929, page 590.

J. H. H. Pirie: "New Disease of Veldt Rodents, 'Tiger River Disease'", *Publications of the South African Institute of Medical Research*, Volume III, 1927, page 163; "Listeria: Change of Name for a Genus of Bacteria", *Nature*, Volume CXLV, 1940, page 264.

J. R. Porter and W. H. Hale: "Effect of Sulfanilamide and Sulfapyridine on Experimental Infections with Listerella and Erysipelothrix in Mice", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XLII, 1939, page 47.

C. A. Pons and L. A. Julianelle: "Isolation of Listerella Monocytogenes from Infectious Mononucleosis", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XL, 1939, page 360; "Identification of Listerella Monocytogenes", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XL, 1939, page 362.

M. A. Poston *et alii*: "Listerella Meningitis: Report of Additional Case with Necropsy Findings", *The Journal of Pediatrics*, Volume XI, 1937, page 515.

E. W. Schultz *et alii*: "Bacteriological Observations on a Case of Meningo-encephalitis", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XXXI, 1934, page 1021.

N. F. Stanley: "The Biological Activity of a Substance Resembling Gliotoxin Produced by a Strain of Aspergillus Fumigatus", *The Australian Journal of Experimental Biology and Medical Science*, Volume XXIV, 1946, page 133.

L. Van den Bergh and P. Liessens; quoted by Webb, *loco citato*.

R. A. Webb: "Listeria Monocytogenes Isolated from a Case of Infectious Mononucleosis", *The Lancet*, Volume II, 1943, page 5.

R. A. Webb and M. Barber: "Listerella in Human Meningitis", *The Journal of Pathology and Bacteriology*, Volume XLV, 1937, page 523.

H. A. Wright and A. R. MacGregor: "A Case of Meningitis due to Bacterium Monocytogenes", *The Journal of Pathology and Bacteriology*, Volume XLVIII, 1939, page 470.

ADDENDUM.

By courtesy of Professor H. R. Carne, four subcultures of *Listeria monocytogenes* were obtained: (i) from a gerbille (Pirie, 1926, South Africa); (ii) from a rabbit (Murray, 1946, England); (iii) from human meningitis (Gibson, 1935, Scotland); (iv) from human meningitis (Carey, 1936, United States of America). Antiserum prepared against the Australian strain agglutinated cultures (i), (ii) and (iii) almost to titre, but failed to agglutinate (iv).

Reports of Cases.

A CASE OF CHRONIC LYMPHATIC LEUCHÆMIA TREATED WITH BIS-β-CHLOROETHYLAMINE (NITROGEN MUSTARD).

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Clinical Record.

ON September 22, 1947, a male patient, aged forty-nine years, was admitted to the Heidelberg Repatriation General Hospital. He stated that eighteen months earlier, following a complaint of chilliness, sweating and increasing tiredness, he was examined and found to be suffering from chronic lymphatic leuchæmia, and was given a course of X-ray therapy to the neck, axillæ, groins and splenic region during a period of about two months. After this X-ray treatment he had felt well until a month prior to his admission to hospital, when for a few days he suffered from some tearing pain over the left side of the chest. He also noticed shortness of breath on exertion, and this increased to a stage at which he panted on walking up a slight incline. He had no cough, and his weight had not changed appreciably.

Examination of the patient on September 22 revealed him to be a rather thin man whose height was about five feet eight inches and weight ten stone. His systolic arterial pressure was 145 millimetres of mercury and his diastolic pressure 95 millimetres. In the posterior triangles of the neck and in the axillæ, some lymph glands could be felt enlarged to as much as an inch in diameter. The inguinal glands were enlarged only slightly. Two inches of dulness to percussion below the right costal margin were regarded as due to the liver, and the spleen was enlarged to one inch below the level of the umbilicus. Physical examination and an X-ray film of the chest indicated that fluid was present in the left pleural space to the level of the third costal cartilage. Piercing of the chest wall with a needle revealed that this fluid was blood-stained. At this stage the patient had very little fever. On September 26 his hæmoglobin level was 13·8 grammes per hundred millilitres, his red cells numbered 3,650,000 per cubic millimetre, and his white cells numbered 80,000 per cubic millimetre; of the white cells 83% had the appearance of mature lymphocytes and 2·5% were labelled pro-lymphocytes.

In the belief that the response to a second course of X-ray therapy would be less satisfactory than that to the first course given about eighteen months earlier, it was decided to treat this patient with a course of bis-β-chloroethylamine, together with repeated partial aspiration of the blood-stained fluid in the left pleural cavity. At five separate aspirations between September 24 and October 2, a total of seven and a half pints of fluid were drawn from the left pleural space. Two and a half weeks later, an X-ray film of the chest showed only a small amount of fluid remaining, and four and a half months later, no fluid could be seen.

Bis-β-chloroethylamine (nitrogen mustard), a colourless crystalline substance, was provided in glass ampoules each containing ten milligrammes. On each of four successive days from October 7, the patient was given an intravenous injection of 0·1 milligramme per kilogram of body weight. Thus, he received 6·4 milligrammes on each occasion. Having had no breakfast, at 8.30 a.m. he swallowed one grain of phenobarbital. At 9 a.m., by means of a "Soluvac" apparatus, isotonic saline solution was run rapidly into a vein of the arm. At the same time, the 6·4 milligrammes of nitrogen mustard freshly dissolved in 6·4 millilitres of sterile distilled water were injected slowly with a fine needle through the wall of the rubber tubing leading to the arm.

Between the fourth and seventh hours after each of three of the injections, nausea and vomiting occurred. An unpleasant taste in the mouth was noted from October 7,

TABLE I.

Date.	Platelets. (Thousands per Cubic Millimetre.)	Hæmoglobin Value. (Grammes per 100 Millilitres.)	Erythrocytes. (Millions per Cubic Millimetre.)	Leucocytes. (Thousands per Cubic Millimetre.)	Percentages of					
					Neutrophile Cells.	Eosinophile Cells.	Stab Cells.	Lymphocytes.	Prolymphocytes.	Monocytes.
26/ 9/47 ..	—	13·8	3·65	80·0	12·0	1·0	1·0	83·0	2·5	0·5
9/10/47[1] ..	290	13·8	4·83	68·0	4·5	0·5	—	88·5	4·5	1·5
11/10/47 ..	250	12·5	4·49	60·0	10·5	0·5	2·0	81·0	4·0	0·5
12/10/47 ..	205	13·9	4·7	32·0	15·5	1·0	1·0	77·0	4·0	0·5
14/10/47 ..	125	13·3	4·4	32·3	9·0	—	2·0	86·0	2·5	0·5
20/10/47 ..	—	10·9	—	39·3	—	—	—	—	—	—
22/10/47 ..	130	12·8	4·01	60·0	4·0	—	—	95·0	—	1·0
24/10/47 ..	215	13·0	4·56	67·0	5·0	—	—	94·0	—	1·0
27/10/47 ..	200	12·9	4·17	48·2	4·5	—	0·5	91·0	4·0	—
7/12/47[1] ..	—	13·4	3·58	68·0	23·0	—	—	65·0	—	—
1/ 3/48 ..	—	6·9	2·34	153·0	7·0	—	—	91·0	—	—

[1] Many smear cells were noted between October 14 and December 7, 1947.

when the first injection was given, until October 13. Ten to eighteen hours after the first and third injections, the patient noticed widespread aches and pains "like malaria", and in one instance his temperature rose to 102·8° F. at 8.30 p.m. One to two weeks after the treatment, he stated that his lymph glands had enlarged, and that this had also occurred after the earlier course of X-ray therapy. This statement could not be confirmed by measurement. The blood changes are shown in Tables I and II.

TABLE II.

Date.	Lymphocytes per Cubic Millimetre of Blood.	Date.	Lymphocytes per Cubic Millimetre of Blood.
26/ 9/47 ..	66,400	22/10/47 ..	57,000
9/10/47 ..	60,200	24/10/47 ..	63,000
11/10/47 ..	48,600	27/10/47 ..	43,900
12/10/47 ..	24,600	7/12/47 ..	44,500
14/10/47 ..	27,800	1/ 3/48 ..	137,000

For about four months after his discharge from hospital on October 31 the patient felt well and was able to work. For about two weeks preceding his readmission to hospital on March 8, 1948, he had noticed swelling of his legs, but was only slightly short of breath on exertion. He now appeared pale and had some œdema of the ankles. His weight was ten stone six pounds, his systolic arterial pressure was 120 millimetres of mercury, and his diastolic pressure was 75 millimetres. On examination of his heart, a rather high-pitched blowing apical systolic murmur was detected. An increased number of lymph glands in the neck and axillæ were enlarged, and to a greater degree than when he was previously in hospital. The size of the spleen and the liver were unchanged. As shown in the tables, the degree of anæmia and the number of circulating lymphocytes had both increased.

After a transfusion of two pints of blood, the present intention is to give the patient a further course of X-ray therapy to the lymph glands and spleen.

Discussion.

Nitrogen mustard is believed to inhibit cell mitosis. Toxic effects which have been reported[(a)] include the following. (i) Severe local inflammation if the material escapes into the tissues around the vein at the site of injection. This was avoided by the technique described. Moreover, there was no evidence of thrombosis in the veins of the arm. (ii) Nausea and vomiting one to eight hours after the injection. In the case described, this occurred after three out of four of the injections. (iii) Damage to the blood-forming organs. This is shown by the presence of (*a*) lymphopenia followed by neutropenia, (*b*) anæmia similar to that following X-ray therapy, (*c*) a tendency to hæmorrhage.

Appropriate dosage usually avoids serious changes of this nature. The cause of the anæmia which developed in this case cannot be stated with certainty. At least part of it could be ascribed to infiltration of the bone marrow by lymphocytes.

No definite general conclusion can be drawn from this single case. The symptomatic improvement was due, at least partly, to removal of the fluid from the left pleural space. The reduction in the number of circulating lymphocytes persisted for not more than a few months.

The response to treatment was probably not so good as that to be expected from skilfully applied X-ray therapy. Experience in America[(a)] indicates that, in the late stages of chronic lymphatic leuchæmia, the results of treatment with nitrogen mustard are not good. It would appear that nitrogen mustard therapy should be restricted to those rare cases in which X-ray treatment has little effect in the early or intermediate stages of this condition.

Summary.

A case is reported of chronic lymphatic leuchæmia treated with nitrogen mustard, and the consequences of this treatment are described. The use of nitrogen mustard for this condition is not recommended except in those early or intermediate cases in which the response to X-ray therapy is poor.

Acknowledgements.

I wish to thank the Chairman of the Repatriation Commission for permission to publish this case, and also Dr. P. R. James, who not only provided the nitrogen mustard, but played the chief part in its administration.

Reference.

(a) C. P. Rhoads: "Nitrogen Mustard in the Treatment of Neoplastic Disease", *The Journal of the American Medical Association*, June 22, 1946, page 657.

A CASE OF ARSENICAL DERMATITIS SUCCESSFULLY TREATED WITH BAL.

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IN view of the fact that BAL has not long been in use in general practice, it is thought that the report of even one case may be of value.

Clinical Record.

A white male, aged thirty-five years, sought treatment on December 5, 1947, for an irritating rash of three weeks' duration. He stated that he had received treatment in 1946 for an itchy rash which was accompanied by the loss of hair; seven weeks prior to his admission to hospital he was found to have syphilis (serological diagnosis). He had received intravenous injections of neoarsphenamine, 0·3 gramme per week, for six weeks. The

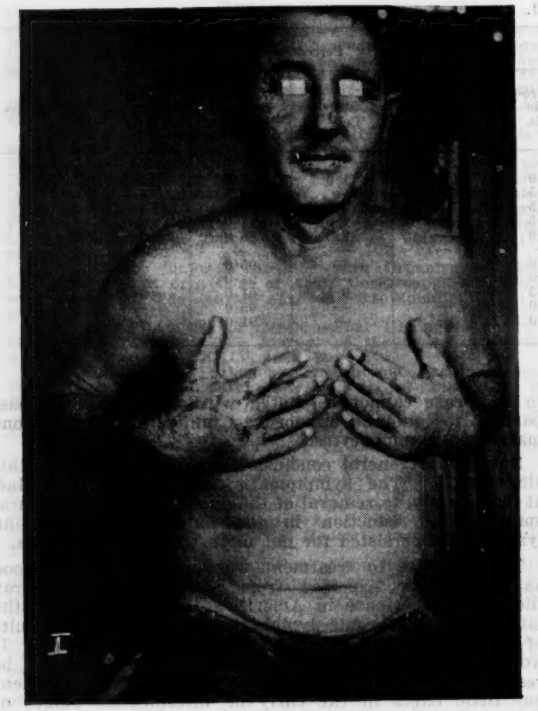

Figure I.
Lesions on the third day of treatment.

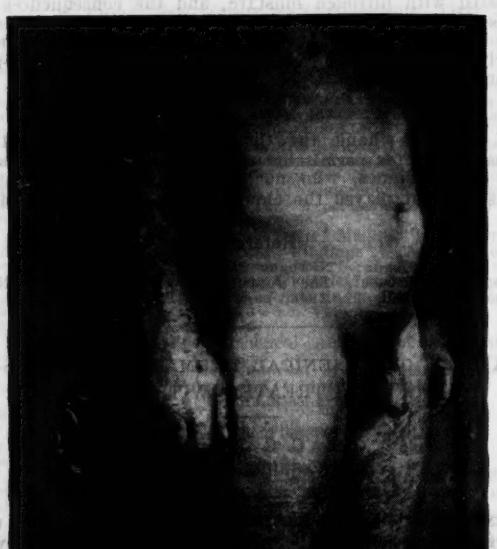

Figure II.
Lesions on the third day of treatment.

last injection he received one week after the onset of the rash.

On his admission to hospital, the patient's appearance was that of a young man of good physique with scanty hair. He complained of much pain and looked ill. His temperature was 102° F. The skin of his face was thickened and covered with fine scales. Swelling of the eyelids and of the face generally was apparent. There were deep cracks in his lips, which bled readily. The skin on the body was dry and scaly, in parts desquamating in sheets. On the medial surfaces of the arms and thighs were red, weeping, denuded areas. There were deep cracks in the skin over the tibiæ and over the dorsa of the hands and feet. Small pustules were observed on the thighs and legs. The blood Wassermann and Kline reactions were positive; the leucocytes numbered 8000 per cubic millimetre.

Figure III.
Lesions at end of treatment.

A course of BAL (10% in peanut oil) was commenced, in accordance with the dosage recommended by the Medical Research Council of the Privy Council. Since the solution used was twice the strength recommended, the volume of each injection was halved. On the first day the patient received four intramuscular injections of one millilitre of BAL solution. On the second, third and fourth days he received two daily injections of one millilitre. On the fifth and sixth days he received one daily injection of one millilitre. His temperature became normal on the third day.

On the sixth day, the swelling of the face had subsided, the weeping areas were dry, the cracks on the hands and feet no longer bled when touched. The pustules on the thighs and legs were dry.

On the eighth day signs of inflammation developed at the site of an injection in the right thigh, with a rise of temperature to 99·4° F. The condition responded to the local application of heat and resolved in five days.

By the fourteenth day desquamation was almost complete, the skin being normally smooth and supple, except for a few small areas of dry scales. The raw areas and

fissures had healed completely. He was then discharged from hospital.

Summary.

A case of arsenical dermatitis and its treatment with BAL is described. Improvement was rapid. Inflammation at an injection site was observed as a complication.

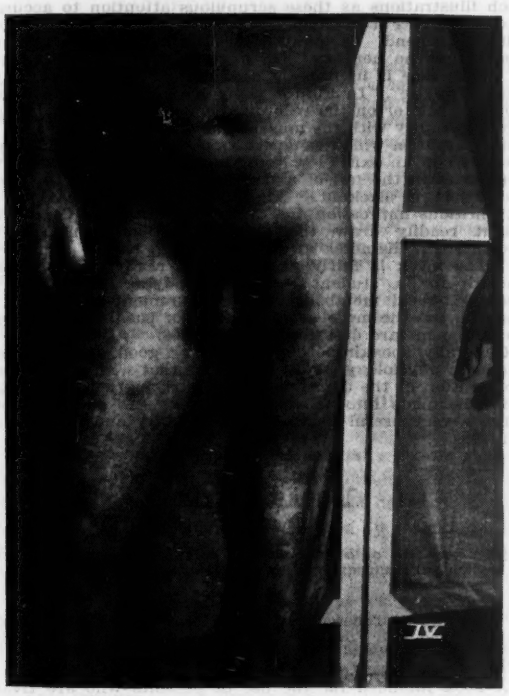

FIGURE IV.
Lesions at end of treatment.

Acknowledgements.

I wish to thank Dr. M. R. Gold, superintendent of the Rockhampton Hospital, for his encouragement and his permission to publish this account, and Dr. N. Gutteridge for providing the BAL.

Bibliography.

"A New Anti-Arsenical Drug", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1947, page 623.

"British Anti-Lewisite: Its Use and Therapeutic Value in Arsenical Intoxications. A Report from the BAL Conference, Medical Research Council", *The Lancet*, Volume II, 1947, page 497.

J. Lawrence Reeve: "Arsenical Dermatitis Successfully Treated with BAL", *British Medical Journal*, Volume II, 1947, page 132.

Reviews.

LIFE IN THE DESERT.

IN the preparations for the North African campaign a series of investigations of the physiology of man in the desert was carried out by the United States Army. These investigations were under the direction of Professor E. F. Adolph,[1] whose research on water metabolism, carried on at Rochester, New York, are well known to those interested in the subject. The results of the investigations for the army are now available in book form. They cover a wide range of aspects of human life in the desert, with special reference, of course, to the types of activity associated with military operations. Most of the work was carried out in a "hot" desert in California, that is, in a region of high temperature and low humidity. There are also chapters on water metabolism on life rafts and in the tropics, or under conditions of high temperature combined with high humidity.

The experiments were mostly carried out by the simple technique of measuring intake and loss of water and variation of body weight. Observations of pulse and respiration rates and of body temperature were made also.

The whole problem of well-being under hot desert conditions has been shown to resolve itself into one of prevention of dehydration. This in turn depends upon supplying adequate quantities of water and minimizing gain of heat from the environment. The practical methods of complying quantitatively with these requirements are considered in detail. At a given rate of working and gain of heat from the environment there is no way of reducing the requirement of water if efficiency is to be maintained. The idea of training men to withstand shortage of water has been shown to be based upon a fallacy. This was shown during the first world war. The evidence produced by Adolph and his associates is so overwhelming that it would seem hardly possible even for the most conservative military commander to retain the idea.

Self-control in the drinking of water may be some indication of the morale of an individual, but it has been shown to be of no advantage from the point of view of physical efficiency. This applies whether water is available *ad libitum* or in limited supply. Under the first condition it was found best to drink as much and as often as desired. Even then it was found that dehydration up to 5% was not prevented. To maintain normal hydration the individual had to force himself to drink. There is no danger of unnecessary loss of water by diuresis. With a limited supply of water it is best to carry as much as possible in the body. Chances of survival are not increased by conserving the supply. Although there is no substitute for water, its use in beverages or cooled may be beneficial by encouraging drinking. According to the authors the stimulating action of hot sweet tea appeared to be restricted to its effect on the British soldier. Certain drugs were found to have transient psychological effects, but no physiological effects were observed.

Various measures for economizing sweat production are discussed with quantitative detail. The only effective measures involve reduction of physical activity, keeping in the shade, and working as much as possible at night. Suitable means of providing shade, important among which is clothing, save more than their own weight in sweat per day.

The book is very well produced. It contains numerous climate maps and appendices, and a selected list of references. It is likely to remain the standard work on the subject for many years to come.

[1] "Physiology of Man in the Desert (Monographs in the Physiological Sciences)", by E. F. Adolph and Associates; 1947. New York: Interscience Publishers Incorporated. London: Interscience Publishers, Limited. 9" x 6", pp. 374, with many illustrations. Price: $6.50.

A YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY.

FOR the first time since 1941 the publishers of the Practical Medicine Series of Year Books have issued a "Year Book of Pathology" and have included in it a large section on clinical pathology.[1] All practitioners who are interested in the subject will be attracted by this volume. Once they had decided to revive this year book, the publishers and editors had to decide whether they would attempt to cover the whole literature of pathology for the intervening period since 1941, or whether they would deal only with material published in 1947. They decided, very wisely, to choose only the most recent articles. The editors, Professor H. T. Karsner and Professor H. Z. Lund, who deal with the broad subject of pathology, suspect that their choice of material may not meet with uniform approval, but critics would do well to remember that choice must have often been embarrassing. It appeared to the editors that in certain instances an abstract of a single article might give rather a restricted view, and in these cases authors have been asked to prepare concise reviews of their investigations. Thus M. S. Allan and A. T. Hextig have a short statement on correlation between vaginal swear and tissue diagnosis in 1045

[1] "The 1947 Year Book of Pathology and Clinical Pathology"; Pathology—edited by Howard T. Karsner, M.D., assistant editor, Herbert Z. Lund, M.D.; Clinical Pathology—edited by Arthur Hawley Sanford, M.D.; 1948. Chicago: The Year Book Publishers Incorporated. 7" x 4¾", pp. 558, with illustrations. Price: $3.75.

gynæcological cases in which operation was performed. H. L. Jaffe has a special article on current problems on bone pathology. D. R. Cowan reviews work on the mechanism of invasiveness of cancer. E. B. Smith and R. P. Custer contribute a long article on the pathology of lymphatic and hæmopoietic organs. These and other special contributions are distributed throughout the first part of the book (that on pathology) which is divided into sections according to the different systems and organs of the body.

The second part of the book, that devoted to clinical pathology, is edited by Professor A. H. Sanford. It is divided into sections dealing successively with hæmatology, clinical chemistry, serology, bacteriology, viruses, mycology, allergy, parasitology, gastric analysis, urinalysis, cytology and apparatus. To attempt in any detail a description of the ground covered in these sections is impossible. It must suffice to state that the information will interest the practising clinical pathologist rather than the clinician who tries to understand the pathology of disease. The latter individual will find much to hold his attention in the first part of this important work.

Critical readers will no doubt find that certain work in which they have been interested has been passed over by the compilers of this work. It will be a useful exercise for them to search for omissions; in the process they will probably find that they themselves have missed notable contributions in their own reading. We wish the resurrected year book on pathology every success.

HANDBOOK OF SKIN DISEASES.

IN presenting a fifth edition of "Gardiner's Handbook of Skin Diseases" Dr. John Kinnear is to be congratulated in bringing this popular small text-book right up to date.[1]

Unlike many works on dermatology, this book expresses in the main the views of the author, especially in the matter of treatment. This is as it should be, especially as the book is written by a master of his subject. The author in the preface states that he attempts to deal adequately with the common diseases and briefly with the rare ones.

It is to be hoped that in the next edition the author will add one or two more of the common diseases such as leucoplakia, apthæ *et cetera*, and if he does not wish to enlarge the book he could exclude such rare conditions as multiple idiopathic hæmorrhagic sarcoma.

There are just a few points that may be referred to. In one or two places the words erythematosus and lichen are used, and for the beginner it would be better to qualify these terms with fuller titles such as *lupus erythematosus* and *lichen planus*. In the article on ichthyosis it is stated that the condition is generally worse in the hot weather; in this country the reverse is the case. No reference is made to sulphur applications for dandruff or seborrhœa. The use of carbon dioxide snow is recommended in two or three doses for early rodent ulcers. In Australia the great majority of skin specialists prefer radiotherapy for these early lesions.

The paper, illustrations and printing are up to the high standard of the previous edition. This small book is strongly recommended to students and general practitioners, and even dermatologists will find it both interesting and stimulating.

AN INTRODUCTION TO PHYSIOLOGY.

PROFESSOR NEWTON'S "Introduction to Physiology" is another small book on physiology, and the author states that it is intended to inculcate a physiological outlook in students of physiology in the early part of their course and in general readers.[2] A small book, more than any other book, calls for accuracy, relevance and clarity. After about page 100 Professor Newton's book approaches these ideals quite closely; in the earlier parts, however, it has many faults. It starts off, for instance, in its table of contents by stating that one litre equals 1000 cubic centimetres. We then have the introductory pages devoted to a peat fire and a baby motor-car. The mistake appears to have been made that it is thought necessary to talk down to the reader, and in talking down to him to use somewhat misleading analogy. If the direct speech which the author uses in his latter 200 pages had been used in the first 200 pages this criticism would not have been made. In the next edition it is to be hoped that the author will revise the last section first, and then apply the same method to the first section.

The illustrations are intended to be suited to the type of paper and are block and line generally, but even with such illustrations as these scrupulous attention to accuracy is called for. For instance, Figure 24 appears not to conform with the legend. In many other illustrations sensory nerve fibres have no neurons. On page 85 the electrical activity of the muscle is improperly described as the "record of the nerve impulse". In Figure 39 by some curious transformation the pointer on the recording system has changed length simultaneously with the muscle, and we can see no reason for using a system which exaggerates the difficulties of a pointer mounted on an axis. Figure 46 is supposed to represent the capillaries in the tail of a tadpole—it looks more like bomb craters in a blackout. Figure 22 is an example of an adventitious impression due to careless drawing: the student might readily draw the conclusion that a nerve fibre decreases in diameter after the impulse passes away from it. The index is fairly good, but not really comprehensive enough for a student seriously studying the book; for example, basal metabolic rate measurement is referred to page 22, but the more usual methods of basal metabolic rate measurement are described on page 158.

Generally speaking, this book is as good as most small books on physiology, and it is obvious that with more careful preparation of the diagrams of the early part of the book it could be made into an excellent book. As such, it would serve a very useful purpose in elementary and introductory courses.

[1] "Gardiner's Handbook of Skin Diseases", by John Kinnear, O.B.E., T.D., M.D., M.R.C.P. (Edinburgh), D.L.; Fifth Edition; 1948. Edinburgh: E. and S. Livingstone, Limited. 7¼" × 5", pp. 266, with many illustrations, most of them coloured. Price: 15s.

[2] "Introduction to Physiology", by W. H. Newton, D.Sc., M.D.; 1948. London: Edward Arnold and Company. 7¼" × 5", pp. 284, with illustrations. Price: 7s. 6d.

Books Received.

[*The mention of a book in this column does not imply that no review will appear in a subsequent issue.*]

"The Care of Tuberculosis in the Home", by James Maxwell, M.D. (London), F.R.C.P. (London); Second Edition; 1947. London: Hodder and Stoughton, Limited. 8¼" × 5⅛", pp. 126. Price: 7s. 6d.

A book intended for the use of patients who are treated at home.

"Truby King, The Man: A Bibliography", by Mary King; 1948. London: George Allen and Unwin, Limited. 5½" × 8", pp. 346, with illustrations. Price: 18s.

The life story of New Zealand's most renowned medical pædiatrician, told by his daughter.

"A Textbook of Clinical Pathology", edited by Francis P. Parker, M.D.; Third Edition; 1948. Baltimore: The Williams and Wilkins Company. 9" × 6", pp. 1044, with illustrations. Price: 67s. 6d.

The previous edition has been largely rewritten and its contents have been rearranged.

"Correlative Neuroanatomy", by Joseph J. McDonald, M.S., M.Sc.D., M.D., Joseph G. Chusid, A.B., M.D., and Jack Lange, M.S., M.D.; Fourth Edition; 1948. California: University Medical Publishers. 7" × 9", pp. 160, with illustrations. Price: $3.00.

A manual in which the authors try to correlate the anatomical and physiological background with the clinical findings in neurological disorders.

"A Symposium on the Use of Isotopes in Biology and Medicine", by various contributors; 1948. Madison: The University of Wisconsin Press. 9" × 5", pp. 448, with illustrations. Price: $5.00.

Papers read at a conference of physicists, chemists and biologists in September, 1947.

"Physiological Psychology", by G. L. Freeman, Ph.D.; 1948. Toronto, New York and London: D. Van Nostrand Company, Incorporated. London: Macmillan and Company, Limited. 9" × 5", pp. 548, with illustrations. Price: 25s.

Written in order "(i) to provide psychologists with a survey of pertinent physiological fact and theory, and (ii) to give a systematic orientation to the study of psychophysiology".

"Diagnosis in Gynæcology: A Classification of Gynæcology Diseases Based on Ætiology and the Clinical Logic for Diagnosis", by James V. Ricci, A.B., M.D.; 1948. Philadelphia and Toronto: The Blakiston Company. 8¼" × 5¼", pp. 272.

Based on clinical demonstrations and intended to teach the art of gynæcological history taking and examination.

The Medical Journal of Australia

SATURDAY, AUGUST 21, 1948.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE UNITED NATIONS APPEAL FOR CHILDREN.

THE recent announcement in the daily Press, that the experts in world food organization consider that the food crisis is now past because of the record harvests in North America and Eastern Europe, is good to learn, but it is the viewpoint of those who direct the grand strategy; the immediate food situation for many millions in Europe and parts of Asia is still grim. The official estimate is that thirty million children face death by starvation and a great many more are suffering the effects of malnutrition. The need of these children has aroused much attention, not only because of the appeal of a child's helplessness and the feeling that children should not bear the brunt of their elders' folly, but because on their welfare depends tomorrow's world. For this reason, the activity of UNRRA in Europe having ceased, the General Assembly of the United Nations on December 11, 1946, unanimously passed a resolution establishing the International Children's Emergency Fund as an agency of the United Nations. The purposes of this fund were described in a paper presented last year by Martha M. Eliot[1] before the Food and Nutrition Section of the American Public Health Association. The fund is to be administered for the benefit of children and adolescents in countries which were victims of aggression or which have received aid from UNRRA. Furthermore, the Assembly directed that the fund should be utilized also for "child health generally", priority being given to countries that were the victims of aggression. Distribution will be on the basis of need, without discrimination because of race, creed, nationality status or political belief. Priority is given to three main activities: (i) supplementing the essential food and other supplies needed to alleviate malnutrition and disease in children and to safeguard the health of expectant and nursing mothers; (ii) encouraging the reestablishment of children's institutions and services destroyed by war; (iii) enlisting cooperation of the United Nations and the World Health Organization in providing fellowships for training of health and welfare personnel for work with children.

[1] *American Journal of Public Health and The Nation's Health*, January, 1948.

The task is a great one and will not be accomplished overnight. The damage done to the health of the children of Europe is deep and lasting. Eliot, who spent four months on a survey of these children, points out that during the war nearly all the countries tried to protect their children. Growing children and pregnant and lactating women were given the first claim—"all too often the only claim"—on certain highly nutritious but especially scarce foods. School meals and other group feeding schemes helped. But in most invaded countries the children suffered severely from lack of food. Food distribution was poor because of disruption of transport. Infant mortality rates rose during and immediately after the war to heights unprecedented in recent years; the incidence of premature births and stillbirths soared as well. Death rates among children who managed to survive the first year of life were several times pre-war levels. Tuberculosis in all forms became rife. Severe rickets has been common, but relatively few other nutritional diseases have been reported, perhaps, according to some pædiatricians, because of a tendency to a decreased average weight and height among children. As has been pointed out on previous occasions in these columns, an exception must be made in regard to the feeding and the health of the children of Great Britain during the war. It will be remembered that the special rationing of milk, for example, had a beneficial effect on child life and health. As a matter of fact Sir Wilson Jameson, the chief medical officer of the Ministry of Health, declared that the average level of child health actually rose during the war. Some countries, for example, Norway, made a rapid recovery after the war, but others are in worse plight, even the bare essentials of food and clothing being desperately needed. Informed officials of countries visited by Eliot in the survey agreed that priority in the expenditure of funds should be given to food, milk coming first, followed by proteins, fats and vitamins, especially cod liver oil. To obtain an independent and expert view of requirements advantage was taken of the International Pædiatrics Congress in the United States in July, 1947, to assemble a representative group of pædiatricians and nutrition experts in Washington. They prepared a comprehensive report of which Eliot, who is the chief medical consultant to the International Children's Emergency Fund, proposes to make good use. Moreover, this Committee on Child Nutrition concluded its report with a statement strongly supporting the aims of the fund. Most right-thinking people will agree with their attitude, but more than mental or verbal assent will be needed. The financial cost will be high, and to meet this at least in part the United Nations Appeal for Children has been launched. The Australian Government, we are told, has already given a sum of two million pounds to the International Children's Emergency Fund. The target set for Australia in the special appeal is one million pounds—not a large sum to be expected from our population for such a purpose. The basic suggestion is that as many as possible should give one day's income. Committees have been set up in each State under the control of well-known citizens. We understand that the Commonwealth Government has agreed to make all private gifts rebates for income tax purposes. Details of where to send donations have been given in the daily Press; the offices of the South-West Pacific representative of the United Nations International Children's

Emergency Fund, Mr. Frank Field, are at 52, William Street, Sydney. The significance of the appeal should not need any emphasis to members of the medical profession, and they, with the rest of the community, will admit the force of the statement of the Committee on Child Nutrition quoted by Martha Eliot: "The world cannot hope for a better future unless it looks after its children."

Current Comment.

A HORMONAL TEST FOR FŒTAL DEATH.

IN 1927 S. Aschheim and B. Zondek introduced their hormonal test for pregnancy which has passed into general use. The work which led to the development of this test has been followed during the succeeding years, Zondek meantime having moved from Germany to the Hadassah University Hospital in Jerusalem. Zondek, with F. Sulman and R. Black, has now put forward[1] a test that aims at determining the death or otherwise of the fœtus in disturbed pregnancy. The biological basis of the test consists, firstly, in the explosive flooding of the organism with chorionic gonadotropin shortly after the implantation of the ovum, and, secondly, in the demonstration of the excreted gonadotropin on the basis of specific ovarian changes in test animals, in particular hyperæmia which leads to massive hæmorrhage in the enlarged follicles and the formation of *corpora lutea*. The idea is then that with the death of a fœtus the first organ to die is the placenta and the cessation of its hormonal function will be indicated by a drop in the level of production and excretion of gonadotropin. Zondek and his co-workers have found in practice that the cessation of placental function may be established with reasonable certainty by the titration of the patient's urine for the presence of the hyperæmic factor. They emphasize the fact that different strains of rats differ from one another in their response to chorionic gonadotropin which makes it necessary to use a strain with a constant reaction and to test it for its sensitivity to chorionic gonadotropin; its hyperæmia unit must be compared with its œstrus-eliciting unit with regard to chorionic gonadotropin and the quantities of urine to be injected determined accordingly. The titration in rats of the authors' Jerusalem strain was carried out on four rats, which received 4·0, 2·0, 1·0 and 0·2 millilitres of urine respectively, corresponding to titres of 250, 500, 1000 and 5000 hyperæmia units per litre. According to whether the strain of rats used by other investigators is more or less sensitive than the Jerusalem strain, greater or smaller amounts of urine are used.

The interpretation of the results is, according to the originators of the test, as follows. If all four rats react, pregnancy is normal. If the first three react and the fourth fails to react, the life of the fœtus is in danger. If only the first two rats react, there is little hope for the life of the fœtus. If only the first rat reacts, the fœtus is dead. It is emphasized that the decision to treat a pregnancy operatively by curettage should never be based on the result of a single test. In every case in which no reaction is observed a repetition of the test should be undertaken.

In the period from forty to eighty days after implantation of the ovum, during which there is an enormously increased hormone production (peak period), the fœtus may be dead even though all four rats react. If all four rats react to urine taken in the peak period, an unambiguous diagnosis on the basis of the titration test cannot be made. However, a result is considered even more significant during the peak period than before or after it, if the fourth rat alone or together with any or all of the first three rats fails to react, since this indicates a relatively greater decrease of gonadotropin during the peak period than before or after it and therefore points with additional certainty to the death of the fœtus.

During the last months of pregnancy, the titre of gonadotropin is not so constant as before, so that individual fluctuations which lead to a considerable drop in the titre of gonadotropin may occur. If the result of the gonadotropin test is negative, Zondek and his colleagues recommend that the blood œstrogen content should be determined as an additional check before fœtal death is diagnosed. They point out that hormonal diagnosis during the final months of pregnancy is of importance only when fœtal heart beats are not distinguishable. The more obvious application of the test is in the early months of pregnancy when the decision has to be made between emptying the uterus or putting the patient to bed for a considerable time, and possibly administering costly hormone and other treatment with the object of maintaining the pregnancy. Zondek, Sulman and Black seem confident of the clinical usefulness of their test if its results are interpreted intelligently, and it is to be hoped that further trial will confirm this view.

[1] *The Journal of the American Medical Association*, April 10, 1948.

NUTRITION AND THE EYE.

MUCH of the study of nutrition has been based on observation of gross deficiencies, and a new (though otherwise undesirable) stimulus was given to this work by the unfortunate conditions in prisoner-of-war camps during the recent war. However, as was pointed out by Sir Stewart Duke-Elder in a paper on the nutritional aspects of ophthalmology read at the ninth annual meeting of the Canadian Ophthalmological Society on June 14, 1946, it is the milder or subclinical evidences of malnutrition that are of more practical importance and interest. In his paper Duke-Elder referred more particularly to the vitamins, of which he said the only ophthalmologically important ones yet known were *A*, *B*, *C* and *D*. Deficiency of vitamin *A* is associated with two ocular conditions: xerophthalmia, which in the young may develop into keratomalacia, and night blindness. Young dogs deprived of vitamin *A* become blind (owing to papillœdema followed by optic atrophy), deaf, and incoordinated in their movements with clumsiness and ataxia. This is due to failure of control of the activities of osteoblasts and osteoclasts in the deposition and absorption of bone during the growth of the skull and vertebral column. Excessive bone in the wrong places encroaches upon the cranial contents, squeezing the nerves and destroying the vital structures. This in turn leads to widespread degeneration of the afferent fibres of the cranial nerves including the optic nerve and an irregular and unevenly distributed degeneration in the afferent tracts of the central nervous system. The early stages of xerosis are due to disturbed metabolism of the epithelium. The late manifestations of keratomalacia are probably neurotropic in origin from compression of the trigeminal nerve by the hypertrophy and uncontrolled growth of the petrous ridge; the optic atrophy and blindness are due to similar compression of the second nerve in the optic canal, and the deafness to compression of the eighth nerve and the cochlea by the petrous bone itself. Referring to the role in dark adaptation of vitamin *A* or carotene which is a precursor of visual purple, Duke-Elder said that much of the work on the subject had been enthusiastic rather than critical. The examination of tens of thousands of men in the army on a similar and adequate diet with abundance of vitamins has demonstrated an individual variation in dark adaptation up to 100%—from normal to practically nothing—which seems adequate grounds for his statement that a test of the dark adaptation in any individual can ordinarily give no index of the state of his nutrition or the availability of vitamin *A*. The reason for the variation is not known. It may be due to a congenital deficiency of the rods and cones, but it has been amply demonstrated that saturation with vitamin *A* cannot raise the sensitivity of the retina of these people to any notable degree. Duke-Elder's summing up is that a normal adaptation curve indicates a normal intake of vitamin *A*, a low adaptation curve means little, and

variation in the adaptation curve in the same individual suggests a variation in intake of vitamin *A*, but can only unsafely be used to assess the vitamin *A* content short of actual deficiency.

Duke-Elder then considered vitamin *C* and the *B* complex of which three factors are of interest: thiamine, riboflavine and nicotinic acid. All of these are of importance in intracellular oxidation which particularly matters to the two avascular structures of the eye, the cornea and the lens. Nothing is known of corneal effects of thiamine lack, but the occurrence of keratitis and ulceration in scurvy and the dramatic therapeutic effects of massive doses of ascorbic acid in the treatment of corneal ulceration suggest that an abundance of vitamin *C* stimulates corneal metabolism. Ariboflavinosis has attracted much attention and extreme statements are made of its frequency based on examination of the limbal plexus, but, as Duke-Elder points out, a variety of common stimuli will readily produce congestion and engorgement of these vessels. It is his opinion that

> only when new capillaries are observed budding from the apices of the terminal loops and running radially into the cornea from them should ariboflavinosis be considered; and only when this occurs in both eyes equally all round the corneal periphery and when the vascularization disappears rapidly on the exhibition of riboflavine can such an origin be considered as substantiated.

This condition is normally rare (though common amongst the prisoners of war); it may be associated with plaques of opacity in the *substantia propria* of the cornea.

The question of the significance of these vitamins in the formation of cataract is intriguing but still unanswered. Certain facts are established. Thiamine is present in the normal lens and is necessary for the catabolism of pyruvic acid formed in carbohydrate metabolism; the coenzyme is absent and pyruvic acid is increased in cataractous lenses. Riboflavine is present in the normal lens; young rats deprived of riboflavine develop cataract which can be checked by the administration of the vitamin. Ascorbic acid is present in the lens in unique quantities and seems to be of fundamental importance in tissue respiration; its concentration falls with advancing age and it disappears entirely in cataract. The significance of the facts is not clear, particularly as clinically cataract is not associated with scurvy and is not a common feature of pellagra or beriberi. Chemically it can be shown that a cataractous lens is an asphyxiated lens, and the fact that these vitamins play so important a part in the oxidation system of the lens cannot but lead to the suggestion that lack of them might be a factor in leading to opacity; frequency of such a lack in old people would not be difficult to explain. However, neither the clinical nor the experimental evidence is conclusive and there may well be some other factor as yet unknown. Duke-Elder considers that the question must still be left *sub judice*.

Lastly reference was made to the effects of avitaminosis on the central nervous system, as seen in lesions of the optic nerve and of the motor nuclei of the eyes in the mid-brain. Many cases of optic neuropathy with central scotoma occurred among prisoners of war, especially those in Japanese prison camps, the usual clinical story being that after prolonged malnutrition, the onset, often sudden, took the form of difficulty in reading or in distinguishing the faces of others; in a few days a central area of blindness develops. The scotoma does not extend beyond the central area, so that blindness does not ensue; pallor of the optic disk may develop particularly in the temporal region. The vision remains the same unless the diet is made adequate within six months, when recovery may occur, the acuity improving rapidly in the first eight weeks and then slowly for the next four months. Improvement is not by contraction of the scotoma, but by a uniform diminution of its density. After six months any amelioration is problematical and after twelve months it does not occur. Nuclear ophthalmoplegia is not common, but occurs in beriberi and pellagra, the clinical condition being the same as that seen in Wernicke's encephalopathy with its mid-brain lesions; these lesions are all associated with some form of malnutrition. Exactly which vitamin is concerned in these two conditions is not clear, though almost certainly one or more of the *B* complex is implicated, thiamine being most likely and perhaps also riboflavine and nicotinic acid. From this point a wide field of speculation opens up on the role of nutrition factors, particularly those concerned with cellular oxidation, in the production of many conditions as, for example, the optic nerve lesions associated with pernicious anæmia and subacute combined degeneration of the cord or the toxic amblyopia of tobacco or alcohol, as well as conditions of mental fatigue and "neurasthenia" and various manifestations short of the dramatic effects described. The answers to many questions are unknown, but Duke-Elder is probably justified in suggesting that, when the answers are known, the nutritional basis of metabolic processes will be found to implicate the activity of every cell in the body to a much larger extent than we suspect today.

BRONCHIECTASIS SIMULATING BRONCHITIS.

THE patient with frequent colds and a persistent winter cough is unfortunately fairly common, and in many cases investigation fails to reveal any condition of serious consequence. Most practitioners are alert to the possibility of tuberculosis and take steps to detect or to exclude its presence, as the case may be. There is a greater possibility, however, that bronchiectasis will be overlooked, firstly, because the classical clinical picture of paroxysmal cough, profuse foul sputum, clubbed fingers and obvious constitutional upset is often expected, and, secondly, because the radiological diagnosis is not always straightforward. It is salutary in this regard to ponder the findings of J. D. H. Wearing,[1] who investigated 214 patients with symptoms and signs suggesting chronic bronchitis, carrying out bronchography in each case, and found that 46 of the patients had bronchiectasis. They were all military personnel, aged from eighteen to forty-nine years and generally of moderate physique and well nourished. Most of them had winter cough and frequent colds. The presenting symptoms in all 46 cases of bronchiectasis were productive cough and dyspnœa; the cough was intermittent, aggravated by changes of temperature and by smoking, but except in the winter months was not severe enough to cause disability; the sputum was either white mucoid material or thick and yellow, no malodour being noticed. Secondary symptoms were chest pain, sweats, loss of weight and hæmoptysis. Among physical signs diminished respiratory excursion at the lung bases was general, impaired percussion note, poor air entry and persistent coarse râles were common, and clubbing of the fingers was detected in eight cases (five with early changes only). The point that cannot be stressed too strongly was that these signs and symptoms in the 46 patients with bronchiectasis in no way differed from those in the 168 chronic bronchitic subjects (in whom bronchography revealed no sign of bronchiectasis), except that in bronchiectasis they were more frequent. The classical picture was absent. Thus for the ordinary practitioner dealing with a single patient the diagnostic significance of the signs and symptoms becomes very limited, and in many cases he will need to have recourse to radiography. Wearing, who is a radiologist, points out that even then the plain film may not suffice; it should in fact be regarded as only a method of making provisional diagnosis and mostly needs to be followed up by bronchography which should make the diagnosis obvious. All this special investigation may sound formidable and in many cases is difficult to arrange, but bronchiectasis is a serious disease which eventually disables and kills. Modern methods of treatment can do much to alleviate and indeed to cure it, but by the time the classical clinical picture has developed the patient has suffered a good deal, the chances of effective therapy are much diminished and, in particular, surgical intervention may no longer be practicable. The chronic cough and the persistent recurrent cold are worth taking seriously.

[1] *The Lancet*, May 29, 1948.

Abstracts from Medical Literature.

SURGERY.

Gastro-Intestinal Intubation.

ARTHUR L. KASLOW (*Surgery*, February, 1948) points out that prolonged use of the rubber stomach and intestinal tube, passed intranasally, causes obvious irritation in the nasopharynx and œsophagus and certain reports indicate that ulceration and severe infection of the cricoid cartilage may follow the use of the rubber intranasal tubes. The author sought a new material that would justify more frequent and early use of the intranasal tube. He found that a smooth transparent plastic material of the "Koroseal" type was the most useful and least irritating. The advantages of this plastic material over rubber are that (i) plastic tubes have a smoother surface than rubber, and so reduce friction in the nose and throat while the tube is being passed and minimize the irritation of the pharynx associated with swallowing after the tube is in place; (ii) the smoother plastic cannot kink or twist on itself tightly enough to obstruct the flow in either direction; (iii) the colourless transparency allows continuous visualization of the stomach or intestinal contents when they are syphoned out; (iv) the absence of deterioration of plastic in contact with oil or ointments permits the use of ointments having greater lubricating properties in the passing of the tube; (v) the low cost permits the articles to be expendable.

Amputations.

HARRY C. BLAIR AND HARRY D. MORRIS (*The Western Journal of Surgery, Obstetrics and Gynecology*, February, 1948) present a paper based on the study of 2612 subjects of amputation cared for at McClosky General Hospital from March 6, 1943, to February 1, 1946. Of the amputations 30% were of the upper extremity and 70% of the lower extremity; the patients, for the most part, were young and in good physical condition. Most of the amputations had primarily been done at or near the battlefront and were of the guillotine type, the method preventing infection and saving stump length. A secondary amputation and plastic repair were usually necessary later for the purpose of forming a stump of better appearance or greater usefulness. At the secondary operation the utmost care should be taken to prevent hæmatoma due to uncontrolled bleeding; muscle over the end of the stump is unnecessary and even delays the fitting of a prosthesis. The best procedure for treatment of nerves is simple cutting with a sharp knife slightly above the amputation level without pulling on the nerve. In the foot, no amputation proximal to the bases of the metatarsal bones will be efficient and the Syme operation is highly satisfactory. Five and a half or six inches is the proper functional and physiological length for a stump below the knee. Above the knee, the larger the thigh stump, the better the control of the prosthesis, and, as a consequence, the greater the activity of the wearer. The dictum is a sound one that every bit of the upper extremity which is viable should be saved. However, occasionally in the hand an amputation which leaves one finger or the thumb only or a deformed hand may be grotesque. It was the custom at McClosky General Hospital to allow the patient to decide as to the secondary operation, and almost to a man they chose amputation at the site of election in the mid-forearm. Above the elbow, the longer the arm stump, the more useful will be the prosthesis. Physiotherapy and psychotherapy are commenced when the stitches are removed and the wound is healed. Partial foot prostheses have so far been far from practical and the most useful hand appliance is the familiar utility hook.

Surgical Methods in the Treatment of Essential Hypertension.

A. LEE MCGREGOR (*The British Journal of Surgery*, January, 1948) raises the issue of the danger that the conservatism of British surgery may be carried too far and states that a visit to the clinic of Dr. Reginald Southwick, of Boston, inspired him to work on the subject of essential hypertension. The paper is based on the study of fifty patients submitted to operation by the author in Johannesburg. Under the heading of ætiology he summarizes the present position of our knowledge and points out that the ætiology of the disease is still unknown. He puts the case for surgery and gives in detail the physiological basis for surgery, namely, the lessening of vasoconstriction or peripheral resistance by removal of part of the nerve supply responsible for the spasm. The Southwick procedure entails the removal of the splanchnic nerves and also the lower thoracic and first and second lumbar ganglia, the last two ganglia being responsible for the entire vasoconstrictor supply to the lower limbs. There is general agreement as to three groups: the young hypertensive who will do well after operation; the old arteriosclerotic with hardened arteries, a wild pulse pressure and a fixed hypertension, who is not suitable for surgery; and the intermediate group who present many problems as to whether or not surgery should be advised. The author quotes M. M. Peet's summary of criteria for operation: a patient below fifty-four years of age; a more or less continuously elevated blood pressure, with a systolic pressure of over 170 millimetres of mercury and a diastolic above 105 millimetres; a non-protein nitrogen blood level below 45 milligrammes and preferably below 40 milligrammes per 100 millilitres; a relatively normal cerebral function. Exceptions are occasionally made, especially in the older age group and in cases of a slightly high non-protein nitrogen blood level. The exceptions are generally made because of incapacitating symptoms such as excruciating headaches, or when there is evidence of an otherwise hopeless malignant hypertension. The technique of the Southwick operation is given in detail with anæsthesia and table positioning discussed. The author concludes that surgery in hypertension has become a successful therapeutic field largely moving to its development by the enterprise of American surgeons. With meticulous study, wise selection and a well-trained team of surgeons, assistants, anæsthetists and nurses, the operation mortality is lower than in any field of comparable magnitude. The results of surgery are remarkable, 80% of patients achieving a worthwhile fall in the resting diastolic pressure and 90% obtaining relief from symptoms. The damage to eye grounds, myocardium and kidneys is reversible by operation in a notable percentage of cases. Conservative measures have nothing comparable to show, but are none the less useful adjuncts to treatment. Medical and surgical forms of treatment should be considered not as mutually antagonistic, but as complementary measures of treatment.

Operations for Imperforate Anus.

J. E. RHOADS, R. L. PIPES AND J. P. RANDALL (*Annals of Surgery*, March, 1948) report two cases of imperforate anus operated on by a combined approach. They point out that there is a small group of patients with imperforate anus which present surgical problems because of the distance between the blind bowel and the anal dimple—type III of Ladd and Gross's classification. In the two cases described there was a distance of 4·5 centimetres and 7·0 centimetres respectively between the gas in the colon and the anal dimple when X-ray examination was carried out by the Wangensteen-Rice method. The perineum was opened first and, as the bowel could not be delivered, the abdomen was opened, the lower end of the large bowel freed, an opening made from the pelvis to the perineum and the bowel guided through. One of the children was reported healthy at eight months of age; the other died at the age of three months and was found to have bilateral hydroureter and hydronephrosis probably of congenital origin.

The Treatment of Craniosynostosis.

FRANC D. INGRAHAM, DONALD MATSON AND EBEN ALEXANDER, JUNIOR (*Surgery*, February, 1948), consider that any abnormality which interferes with the unrestricted growth of the human brain during the first years of life results in corresponding interference with the neurological functions which are elaborated during the same period. A large group of clinical entities have been described, exhibiting varying degrees of cranial deformity, amblyopia and mental deficiency, whose common underlying deficiency is restriction of normal brain growth due to premature fusion of the cranial sutures. These bony lesions are grouped together under the term "craniosynostosis". In the treatment, a number of different surgical procedures have been attempted to relieve the constriction caused by the premature synostosis. Linear craniectomy, subtemporal decompression, elevation of large bone flaps, removal of plaques of bone, creation of artificial sutures and morcellation of the entire calvarium above the cerebellar area have all been employed. These operations have all met with a certain amount of success in the relief of intracranial pressure and probable preservation of function in older children. However, during the first months of life, these procedures appear to be unsatisfactory owing to the extremely rapid regrowth of bone which fuses artificially created defects at this age. This factor led these workers to study the reactions of various inert foreign substances placed between the margins of artificially created channels in the cranium. These experiments

were performed on monkeys and dogs, and fibrin film, oxidized cellulose gauze ("Oxycel"), tantalum, methyl methacrylate ("Lucite") and polyethylene were tried. Of this group, polyethylene ("Polythene") was found to possess the most desirable properties. It can be obtained and used as flexible hollow tubing or as a thin film. It is well tolerated by bone and other body tissues. In periods up to nine and a half months it remained physically inert in the body. Preliminary observations of clinical trials of this method in six infants with craniosynostosis have been favourable.

Posterior Gastro-Enterostomy for Organic Pyloric Stenosis.

HUGH REID AND R. MARCUS (*The British Journal of Surgery*, January, 1948) review the end results in eighty unselected consecutive patients submitted to gastro-enterostomy for pyloric stenosis between 1928 and 1938. All patients reviewed were treated by a posterior "no-loop" vertical isoperistaltic gastro-enterostomy with a large stoma. Pyloroplasty, invagination, cauterization, excision of ulcer and occlusion of the pylorus were considered unnecessary and no attempt was made to treat the cause of the ulcer in any case. Two operative deaths occurred, making a mortality of 2·5%, and the authors conclude that posterior gastro-enterostomy is still the ideal operation for organic pyloric stenosis. Of the patients alive over ten years after the operation 98% were considered to have satisfactory results, the average age of the patients at the time of the operation being fifty and a half years.

Surgery of Lumbar Intervertebral Disk Protrusion.

MURRAY A. FALCONER, MURRAY MCGEORGE AND A. CHARLES BEGG (*The British Journal of Surgery*, January, 1948) present a paper on the principles and results in lumbar intervertebral disk protrusion based on 100 consecutive cases of patients submitted to operation. They deal with the subject under headings of introduction, case material and factors influencing the success of operative treatment, and under the last heading, selection of cases for operation, mention points in operative procedure and adequate management of convalescence. Then they discuss problems of subsequent operations or recurrent symptoms, recognition of other lesions which may simulate disk protrusion, complications of intervertebral disk operations and results of treatment. They conclude that disk lesions are the common cause of severe and intractable sciatica and offer as proof details of analysis of 77 cases of chronic sciatica in which operation was performed. During this period only two other patients with apparently severe and intractable sciatica passed through their hands; both of these had features indicating tumour of the *cauda equina* or spine. They also conclude that lumbar disk lesions are at least a common cause of severe and intractable low-back pain, disk lesions being demonstrated in 22 of 23 patients submitted to operation. Although complete cure cannot be obtained in all cases, the results of surgery are, in a large measure, regulated by factors within the control of the surgeon. A careful selection of cases is the first essential. All patients with severe sciatica and/or severe low-back pain should be treated in the first instance by bed rest or immobilization for at least one month. Those patients with sciatica who are not relieved appreciably should then be carefully investigated to exclude other lesions. The majority, however, will be found to be suffering from disk lesions and should be submitted to operation. In the case of severe and intractable low-back pain, the authors advise the added criteria of definite physical signs and a positive result from a myelogram as the bases of selection. At operation, adequate exposure is necessary. If this cannot be achieved by an interlaminar approach, a laminectomy should be performed; as long as the interarticular joints are left intact, laminectomy does not permanently weaken the spine or prolong convalescence. The appearance of the pathological disk varies greatly and in particular intermittent prolapses must not be overlooked. All loose and readily detachable tissue from the interior of the disk should be removed in many instances, this requiring exposure and curettage of the disk from both sides of the theca. Return to work is hastened and facilitated by graduated exercises designed to strengthen weakened *erector spinæ* muscles. Spinal fusion is seldom warranted and persistence of symptoms after operation should raise the question of reexploration.

Conservative Surgery in Tumours of Bone.

B. L. COLEY AND N. L. HIGINBOTHAM (*Annals of Surgery*, February, 1948) advocate the wider employment of conservative measures in the surgery of bone newgrowths. The authors consider that there has in recent years been a growing tendency to rely more on surgical measures and less on radiation therapy. With the present increasing preference for operative treatment there appears to be a definite trend in the direction of conservatism, especially in respect to the mutilating procedure of amputation. This implies that in the past perhaps too little attention was paid to the possibility of selecting cases that might yield satisfactory results by a technique which eradicated the disease locally and yet preserved all or most of the extremity and a good measure of function as well. Five types of conservative surgery are discussed: curettage, partial resection, segmental resection with massive bone graft, excision, and amputation at a lower level than previously recommended. The indications for the use of these various procedures are discussed. The authors point out that the efficacy of these methods can be tested by subsequent events. If local recurrence ensues, the choice of method has been wrong, but if no local or regional recurrence ensues, then the conservative measure has been justified, even if the patient should eventually develop a distant metastasis. As an example of the results of employing amputation at a lower level than usually advised, the authors quote their experiences with a consecutive series of 39 cases of osteogenic sarcoma or chondrosarcoma of the lower end of the femur. For these patients a high thigh amputation was performed instead of the orthodox disarticulation at the hip. In 37 cases no stump recurrence ensued. In one of the other two patients a disarticulation at the hip joint was performed for stump recurrence and the patient had remained well for more than five years when last traced. Thus, in only one instance was the patient's chance of survival theoretically diminished. On the other hand, 37 patients were left with sufficient stump to permit the fitting of an artificial limb.

Transgastric Removal of Large Foreign Bodies from the Œsophagus.

W. D. GOTCH AND W. F. MOLT (*Archives of Surgery*, January, 1948) advocate the wider use of the transgastric approach in the removal of large foreign bodies impacted in the lower end of the œsophagus. After emphasizing the difficulties and dangers of per-oral extractions through the ordinary œsophagoscope, they describe an alternative method. The stomach is pulled up into a short abdominal incision and a small opening is made in its anterior surface. By way of this a sigmoidoscope may be introduced and passed through the cardiac orifice. The wider diameter of the sigmoidoscope permits more accurate control of the foreign body. Experiments on the cadaver show that a level as high as the aortic arch may be reached. The authors report a case in which the method was used.

Tantalum Gauze in Hernia Repair.

T. D. THROCKMORTON (*Surgery*, January, 1948) discusses the use of tantalum gauze in the repair of herniæ complicated by tissue deficiency. Tantalum is biologically inert. In its presence tissue repair progresses rapidly and in an orderly fashion. For well over fifty years metal filigrees and grids have been used in hernia repair, the earliest being constructed of silver. In many of these the wire used was thick and the appliance was so rigid as to cause discomfort. In others infection of the wound was followed by prolonged drainage, though eventual healing seems to have been the rule. While accurate statistics are not available, it seems certain that many herniæ, otherwise considered inoperable, were wired. For various reasons, however, the use of wire filigrees fell into disuse. The tantalum mesh now in use, from the standpoint of both its innate properties and its physical fabrication, has little resemblance to the earlier filigrees except in its ultimate purpose. It is strong, pliable and biologically inert in the tissues, and forms a scaffold for the ingrowth of sturdy white fibrous tissue which firmly closes the hernial defect. The edge of the gauze implant must be sutured to strong white fibrous tissue or to periosteum, and the size of the implant will be determined, not by the size of the actual defect, but by the position of reliable supporting structures, which must be adequately exposed. The implant must be of such generous proportions as will permit it to be sutured in place without tension. The suture material recommended is monofilament tantalum wire. Sutures of other metals must not be used because of electrolytic action. The author writes in the light of his experience with seventeen cases in which tantalum gauze was used, and emphasizes that it is not his intention to advocate its routine use, but rather to suggest it as offering another string to the bow of the ingenious surgeon.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Rachel Forster Hospital for Women and Children, Redfern, on March 18, 1948, the President, DR. H. R. R. GRIEVE, in the chair. The meeting took the form of a series of clinical demonstrations by members of the honorary medical staff of the hospital. Part of this report appeared in the issue of August 14, 1948.

Tumour of the Adrenal Cortex.

DR. CATHLEEN CUNINGHAM presented a report on a female patient, aged thirty-two years, who was first seen by Dr. Nell Farrar on June 28, 1945, complaining of a thick growth of hair on her face for about twelve years. She had first menstruated at the age of thirteen years, the menses being regular, lasting for five days in each twenty-eight day cycle, and the loss moderate. She thought that the hair on her face had become noticeably abnormal at about the age of twenty years. At the time of consultation she had a heavy growth of hair on the upper and lower lip and even more over the chin and lower part of the cheeks. The menses had become irregular for the previous two years, lasting for three days in a twenty-two days cycle, and occasionally failed to occur. She had not a dry skin and had oily rather straight hair. On examination she was a thin, shy-looking woman, obviously affected by her hirsute face, with a flat chest, a rather deep husky voice, hirsuties on the face and to a greater degree the chin and abdomen, the pubic hair being of male distribution. There was slight enlargement of the clitoris; vaginal examination revealed that she was a *virgo intacta*; a large mass was felt in the pelvis *per rectum* and diagnosed provisionally as an ovarian cyst or fibromyomata. The blood pressure was 138 millimetres of mercury (systolic) and 80 millimetres (diastolic). A twenty-four hour specimen of urine was examined for neutral 17-ketosteroids at Prince Henry Hospital and the amount was 105 milligrammes of androsterone per twenty-four hours. The pathologist stated that the results suggested adrenal tumour rather than adrenal hyperplasia.

Operation was advised by Dr. Farrar for removal of the mass in the pelvis, and Dr. Cuningham was asked to examine the adrenal glands while the abdomen was opened. On September 12, 1945, the patient had a section performed by Dr. Farrar. The uterus was found to be enlarged with multiple fibroids and was removed; the ovaries appeared healthy. The right adrenal felt slightly enlarged and thicker than normal. There was a cyst about the size of a ping-pong ball medial to the left kidney near the upper pole and this seemed to be detached from and medial to the kidney. The left adrenal gland was not palpated with certainty.

For the next ten months repeated estimations of neutral 17-ketosteroids were made. On October 18, 1945, there were 105 milligrammes of androsterone in a twenty-four hour specimen of urine. On October 16, 1946, there were 64 milligrammes of androsterone. On October 17, 1946, with the patient in the prone position, a bilateral approach to the adrenals was performed according to Young's method, and both adrenals were inspected. The right adrenal appeared normal, but the left one was represented by a cyst similar in size and shape to the one palpated at the previous operation and placed medially to the upper pole of the left kidney. The cyst was friable, soft, of a deep plum colour, with a strip of yellowish tissue crossing it in an irregular manner. The cyst was removed with ease, but broke on being removed from the operation site and appeared to contain old blood. The patient made an uninterrupted recovery.

The pathologist, Dr. J. O'Brien, of Prince Henry Hospital, made the following report.

Macroscopic Examination.

Several irregular pieces of very soft tissue were received. It would seem that these pieces once constituted a rounded cyst with walls of varying thickness from a few millimetres up to 2 cm. The cyst probably had a total external diameter of about 3 cms. when intact. On one of the pieces of tissue is attached a small piece of apparently normal adrenal tissue. This piece was about 1/3 the size of the normal gland.

Microscopic Examination.

The tumour has a considerable similarity to the *zona reticularis* of the normal adrenal cortex. It consists of an irregular network of cell cords, the latter being one to three cells in thickness. Between the cords are numerous capillaries and what appear to be lymph spaces. In some areas there are cystic spaces containing coagulated secretion or lymph. At the periphery of the tumour the cells are arranged more in the form of loops as in the normal glomerulosa. Most of the cells, especially in the centre of the tumour, are polygonal in shape and contain granular, faintly acidophilic cytoplasm. Brown pigment is often present, the pigment not giving the iron reaction. These cells are possibly the "androgenic" cells described in the literature. However, the literature does not leave one satisfied that these cells actually secrete the androgenic hormone. A moderate number of cells carry very much lipoid as in the normal cortex. All stages between these cells and the granular cells noted above are seen. There is no evidence of malignancy. The piece of apparently normal adrenal tissue attached to the tumour shows considerable hyperplasia.

On October 29, 1946, estimation of neutral 17-ketosteroids revealed 3·2 milligrammes of androsterone in a twenty-four hour specimen of urine. On November 7, 1946, there were 3·2 milligrammes of androsterone in a twenty-four hour specimen.

Dr. Cuningham said that the patient's subsequent progress had been good, except for one point. She had resumed work, and, although she was still of a very retiring disposition, her family said that her outlook was brighter. The hair on her head had thickened and had become quite curly, but unfortunately her facial hair remained in a state which made it necessary for her to shave daily. There were rather thick and bristly patches at the angle of the chin and midway between the chin and the angle of the jaw. The patient persisted in shaving daily, for cosmetic purposes, but stated that she thought that the growth was thinner and not so profuse. She had to earn her living and could not afford to go into retirement to let the hairs grow and see if they would fall out. Dr. Cuningham said that she would be grateful if any fellow member could give some explanation of the continued growth of hair in the beard region, or could give any help towards alleviating the condition which was very distressing to the patient.

Phæochromocytoma.

Dr. Cuningham then discussed a female patient, aged fifty years, who had been admitted on August 23, 1947, under the care of Dr. Helen Taylor, with a history of paroxysmal hypertension in attacks occurring twice daily and lasting fifteen minutes. In the attacks her blood pressure rose from a level of 160 millimetres of mercury (systolic) and 100 millimetres (diastolic) to 290 millimetres of mercury (systolic) and 160 millimetres (diastolic). One attack after her admission lasted thirty-six hours and left the patient with a dilated heart and moist râles all over the chest. It was felt that she would not survive another attack and operation was performed on September 19, 1947. Both adrenals were exposed and a reddish tumour, measuring 7·0 centimetres by 5·5 centimetres by 4·0 centimetres with a rich blood supply, was removed from the right adrenal. In spite of transfusion, intravenous drip administration of adrenaline and the administration of cortical extract, the patient's blood pressure could not be maintained at a safe level and she succumbed nine hours after operation. The tumour was found to be a phæochromocytoma.

This case will be reported in full at a later date.

Œsophageal Obstruction.

DR. BRENDA LAWS discussed two cases of œsophageal obstruction illustrative of the use of Souttar's tube.

The first patient, a woman, aged sixty-four years, when first seen on November 6, 1945, had been losing weight for about one year and for three months had been unable to eat solids. At X-ray examination a barium bolus passed freely down the œsophagus. A blood count revealed a mild hypochromic anæmia. An œsophagoscopic examination revealed a small cauliflower-like mass at a distance of 20 centimetres from the teeth; it was not fungating. A stricture extended round the wall for some distance on either side. A number 10 bougie was passed with difficulty. Examination of a biopsy specimen revealed plain muscle and fibrous tissue extensively infiltrated with inflammatory cells, chiefly of the plasma cell type. No evidence of malignancy was found. Dr. Coutts considered the condition most probably malignant. A Souttar's tube was inserted, and she was well for some time. She was readmitted twice during 1946 for relief of obstructive symptoms. Œsophagoscopic examinations revealed no foreign body and the condition was considered

clinically to be malignant; no evidence of malignancy was, however, found in a biopsy specimen.

She was readmitted in September, 1947, with a history of difficulty in swallowing for two weeks and a dull ache in the chest. Œsophagoscopic examination revealed a fungating growth obstructing the lumen from the level of 25 centimetres to 30 centimetres from the teeth. X-ray examination with a barium bolus showed a definite narrowing of the distal one-third of the œsophagus probably due to newgrowth. A Souttar's tube was inserted.

When she was readmitted on November 24, 1947, it was stated that she had been swallowing well till November 23, when she commenced to vomit fluids. She swallowed fluids and barium without difficulty in hospital. Œsophagoscopic examination showed some pieces of food caught in the Souttar's tube. A number 9 bougie was passed with difficulty. X-ray examination showed the tube in the same position as before. Dr. Laws said that the patient had had an X-ray examination again one week before the meeting. The Souttar's tube was in its same position. She was comfortable and ate all but the hardest solids. She had maintained her weight and led an active life.

Dr. Laws then referred to a female patient, aged sixty-eight years, who, in May, 1946, had undergone the operation of right radical mastectomy. Masses were found along the axillary vessels. Biopsy revealed scirrhous carcinoma. There was no dysphagia at that time. Subsequently she had deep X-ray therapy. She was readmitted in October, 1947, with a history of dysphagia for three months and inability to swallow even liquids for two weeks. On examination with an opaque bolus, there appeared to be almost complete obstruction at the level of the fifth thoracic vertebra. The patient was very dehydrated and emaciated and saline was administered intravenously. Œsophagoscopic examination showed almost complete obstruction at a level of 20 centimetres from the teeth. There was no ulcerated surface. The obstruction was apparently due to pressure from without. The œsophagus was pushed over to the right. Bougies were passed and a large Souttar's tube inserted; the obstruction was over four inches in length and the Souttar's tube was not quite long enough. X-ray examination immediately afterwards showed that the barium bolus passed down the œsophagus without obstruction. The patient was taking fluids by mouth well. On November 10 she reported that she had been swallowing fluids and any soft solids well and a larger Souttar's tube was inserted. On November 23 the Souttar's tube was found to be at the level of the second thoracic vertebra. The œsophagus below filled poorly and was narrowed. A smaller tube was inserted with difficulty. On November 26 the patient died. Dr. Laws pointed out that when admitted in October the patient was being kept alive by intravenous therapy. She was kept alive and in comparative comfort in her own home for about a month by a simple method.

A MEETING of the Victorian Branch of the British Medical Association was held at Mooroopna and Shepparton on the afternoon and evening of Saturday, May 15, 1948, MAJOR-GENERAL F. KINGSLEY NORRIS, C.B.E., D.S.O., President of the Victorian Branch, in the chair. In the afternoon, at the Mooroopna and District and Base Hospital, a series of clinical demonstrations was given by members of the staff of the hospital. In the evening, at Shepparton, DR. A. J. SINCLAIR gave an address on psychiatric problems arising in general medical practice.

Ruptured Gall-Bladder.

DR. D. G. MACKELLAR (Mooroopna) showed a man, aged fifty years, who had been admitted to the base hospital on April 29, 1948, because of severe paraumbilical pain, which the patient described as a "tearing sensation". In 1942 he had first experienced the pain, which had lasted for fourteen hours and had been accompanied by the vomiting of bile; a similar attack had occurred a week later. Other attacks had followed at long intervals, but he had been free of them for years until quite recently, when two more had been the cause of his admission to hospital. On May 2, when he was in hospital under observation, the patient had a severe attack which was considered likely to be due to acute appendicitis, and the decision to operate was made.

At the operation, under high spinal anæsthesia (thirteen millilitres of "Nupercaine", one part in 15,000 solution), appendicectomy was performed through McBurney's incision; but as bile-stained fluid was found trickling down the right paracolic gutter, a right paramedian incision was made with transverse division of the posterior sheath of the *rectus abdominis*. The gall-bladder was found to be acutely inflamed and filled with stones, and bile had leaked from erosion around a stone at the fundus. The gall-bladder was removed, but the cystic artery, which had apparently thrombosed, was not seen. The bed of the gall-bladder was drained through the flank and the wounds were closed. The incisions healed by first intention and recovery was rapid, being assisted by the administration of twenty grammes of sulphadiazine and 1,000,000 units of penicillin. The patient left the hospital sixteen days after the operation. Dr. MacKellar added that he had been unable before the operation to differentiate between leakages from the gall-bladder, from a peptic ulcer and from the appendix.

DR. F. W. GRUTZNER (Shepparton) said that, although perforation of the gall-bladder was rare, he happened to have a female patient in hospital suffering from the condition. He, too, had suspected the appendix, but it was found to be blameless. His patient was known to be epileptic, but had had no signs or symptoms indicative of gall-bladder disease; she was not yet safe, as she had had several attacks of pneumonia.

DR. A. F. TAYLOR (Shepparton) thought that rupture of the gall-bladder was more likely to occur in older subjects than in young people, and that acute inflammation was uncommon in association with perforation of the gall-bladder.

DR. C. J. O. BROWN (Melbourne) agreed that rupture was not common, but placed emphasis on the high mortality of the complication. He said that usually the gall-bladder became tensely inflamed, and if it ruptured the lesion was well localized and the contents did not escape down the paracolic gutter as in the case Dr. MacKellar had presented.

Major-General Norris congratulated Dr. MacKellar on the result he had achieved; he had applied correct treatment, had not made any mistake or done any harm to the patient, and by operating he had diagnosed the condition accurately and treated it successfully.

Melanoma of the Leg.

DR. R. O. MILLS (Shepparton) presented a man, aged forty years, suffering from melanoma of the leg. Dr. Mills said that he had examined the sore on the leg originally in September, 1942, shortly before the patient joined the army and left the district for four and a half years. On that first occasion the sore, on the medial aspect of the leg just below the knee, was about the size of a shilling and had been present for about a year, repeatedly developing scabs which left the area raw and tender. During the years in the army the man had attended the regimental aid posts frequently for dressings and had spent twenty-five weeks altogether in army hospitals in Queensland and Victoria. Antiseptics of various kinds, dressings of "Elastoplast" and plaster of Paris, and treatment with penicillin and irradiation had been utilized from time to time. A biopsy section had been prepared and pronounced to be non-cancerous, and the blood serum had been tested presumably by the Wassermann technique and was reported not to have reacted.

Dr. Mills went on to say that when he examined the patient again in 1947, an area on the leg approximately two square inches in size had a dry, eczematous appearance; it was sometimes dry and at times covered with a moist serous or purulent discharge. In August, 1947, scrapings and smears were examined at the base hospital without the discovery of any fungi, but *Staphylococcus aureus* was recovered in pure culture and a vaccine was prepared. On treatment by this vaccine the sore became clean and islands of epithelium appeared. By February, 1948, a portion of the area was elevated and looked like a broad-based granulomatous polypus. An excision of the raised part was made and the specimen was sent to Dr. Reginald Webster for pathological examination. He reported that he had found evidence of malignant melanoma, though few pigmented cells were present. Dr. J. B. McMiken had then treated the area with radon needles, and he would later describe the technique and dosage used; the reaction had settled down and the whole of the area had healed with soft scarring. The patient was well, rectal examination revealed no abnormality, and normal skiagrams of chest and pelvis had been obtained; but there was a firm palpable gland in the femoral region; some glandular enlargement had been noted previously when the leg was infected, but that firm gland had persisted, although some three months had passed since the radon treatment had been completed. Dr. Mills asked for discussion concerning the import of the gland, the desirability of excising it for examination, and the advisability of further implantation of radon or irradiation of the area.

DR. J. B. MCMIKEN (Mooroopna) said that he had been dubious about the diagnosis of melanoma when he was consulted; the sore looked like an eczematous patch with a couple of sutures in the centre, as the raised area had been removed. Dosage was difficult in irradiation therapy for melanomata, which were relatively insensitive to radium; in radium treatment 8 *R* was almost the limit productive of radionecrosis and would produce it in positions where the blood supply was not good. In the case under discussion he had used a margin of 1·5 centimetres all around the lesion, implanting needles in a 7·5 centimetre circle with a central square and surrounded by a minor circle. He had expected the sore to take much longer to heal than it actually took. He, too, had noted the presence of an enlarged femoral gland to which Dr. Mills had directed attention; but he had decided that it was wise to treat the primary growth first and to await the settling of the reaction before treating the secondary area; the gland had stayed in very much the same state for nearly three months. Biopsy aspiration could be attempted, but it was not possible to guarantee that a specimen suitable for pathological examination would be obtained. Another method would be the removal of the gland for examination and irradiation of the area. One solitary gland might be treated thus with success; but surgical dissection of all the glands of the area was a formidable undertaking, and the resultant swelling of the leg would favour the breaking down of the primary lesion.

DR. R. F. WATSON (Melbourne) said that he was very interested in the case; Dr. Webster's opinion was not to be argued with; however, the sore had behaved very favourably for a malignant melanoma. It would perhaps have been a basal-celled carcinoma or rodent ulcer arising in the chronically ulcerated tissue. It would be of great interest to have a report from Dr. Webster on a section of the gland after excision.

DR. W. E. SPRING (Melbourne) said that he had had a sad experience in removing a small mole from a soldier's leg merely because it rubbed against the trousers, and without any thought that it was in the least active or dangerous. He had seen the soldier die in the Heidelberg Military Hospital four years later with metastases, some of which must have been outside and beyond the normal skin removed in full thickness with the mole.

DR. C. J. O. BROWN said that they had heard the details of the treatment with radium and the result was excellent; but surely radical surgical excision would have been safer and more practicable even if a skin graft was afterwards required. He also pointed out that a second gland was palpable near the obvious gland, and that the outlook was hopeless once a melanoma reached the glands; the hope for the patient was that the primary growth was not a melanoma. His suggestion to Dr. Mills was that all of the glands in the groin that were obviously enlarged should be removed, and that sections from them should be prepared. Dr. Brown had performed extensive dissection and removal of glands in a similar case, and the leg had not swollen If they were dealing with melanoma the man had no chance; but if the condition was basal-celled carcinoma, the treatment he had advocated would leave them full of hope.

Fracture of the Femur.

DR. A. E. DICKMANN (Shepparton) showed a farmer, aged eighty years, who had fallen from his truck recently whilst loading cream cans. He had sustained a right-sided Colles's fracture and a pertrochanteric fracture of the right femur with comminution. On March 27, 1948, the day after the accident, the wrist fracture was reduced and splinted and the leg was put up in a Thomas splint with extension. On April 5 the fracture of the femur was reduced on the extension table and a Smith-Petersen nail was driven into the femoral neck and head, and the Trocart plate attached to the nail was screwed into the femoral shaft and fixed with four screws. At the end of the operation the patient was in good condition, and it was ascertained from skiagrams that the fragments were in excellent position.

On the day after the operation the right limb, which was supported on a firm bed with pillows, was submitted to active movements, and by April 12 90° of flexion were obtained both at the hip and at the knee. Two days later the wound was soundly healed and the sutures were removed, and next day the patient sat out of bed. Skiagrams prepared on April 20 showed excellent position and a good callus formation, and by April 22 he had a full range of painless, active hip movements, with full flexion at the knee joint limited only by incomplete recovery of tonus in the *quadriceps femoris*.

DR. C. STANLEY (Bendigo) congratulated Dr. Dickmann on the excellence of the management and on the successful result, which served to illustrate the high standard of work being done in the country centres.

DR. W. E. SPRING added his congratulations, and observed that the addition of the curved plate to the Smith-Petersen nail was a great improvement, as extra purchase could be applied to get the fragments aligned and facilitate nursing and active movement of the limb. In the fracture under discussion the pin was not driven right up into the head of the bone as in intracapsular fractures; good union was obtainable when the pin bridged the line of fracture satisfactorily.

Major-General Norris, after drawing attention to a recent article published in the *British Medical Journal* on the danger of going to bed, supported the remarks of previous speakers on the good quality of medical practice in the country.

Obstetrical Complications.

DR. A. F. TAYLOR showed a female patient, aged thirty-two years, who had recovered after a stormy pregnancy. She had four living children ranging in ages from thirteen to two years. She had been admitted to the base hospital on April 22, in the thirty-first week of gestation, with "solid" albuminuria, headache and a systolic blood pressure of 200 millimetres of mercury, but without demonstrable œdema. It was obvious on examination that hydramnios was present, and from the skiagrams the presence of twins was confirmed. The patient reacted fairly well to eliminative treatment, and within four days the albuminuria was reduced to one-tenth and the systolic blood pressure to 140 millimetres of mercury; but she remained at that stage of improvement during the following week. By renal function tests it was found that the urea concentration excretion was one-third of normal.

It was then decided to rupture the membranes to induce labour, but when the vagina was swabbed hæmorrhage started, as marginal *placenta prævia* was present. Any further attempt at rupture of the membranes produced hæmorrhage, so a lower segment Cæsarean section was performed under "open" ether anæsthesia. When the uterus was being incised, 0·5 millilitre of "Pitocin" solution was injected and the first child was delivered. Then it was found that a contraction ring had developed below the *fundus uteri*, completely preventing extraction of the other child. The ring relaxed and the baby was delivered after the anæsthetist had administered chloroform. The first baby, a female, weighing three pounds five ounces, and the second, a male, weighing four pounds five ounces, both survived, and at the time of the meeting were still well and each of them had gained in weight.

Dr. Taylor went on to say that the placentæ were completely separated, one being attached in the fundus and the other implanted to the lower left-hand side encroaching on the internal *os cervici*. The patient, ten days after the operation, had a systolic blood presure of 170 millimetres of mercury and a diastolic pressure of 100 millimetres; the urine was free of albumin and the results of the renal function tests had improved. Three hours after the start of the urea concentration-excretion test the reading was 5·7 grammes, the normal being 6·4 grammes. Further information supplied was that the patient was said to have had albuminuria with each of the preceding three pregnancies, and Dr. Taylor considered it probable that she was the subject of essential hypertension.

DR. K. LIDGETT (Melbourne), after ophthalmological examination, said that he had found no positive evidence of nephritis, as no hæmorrhages or exudate were to be seen; but mild arteriosclerotic changes were demonstrable in the vessels. He commented that bilateral detachment of the retina was an especial risk in hypertensive patients with albuminuria of pregnancy, though with the subsidence of œdema replacement of the retina was favoured.

Subarachnoid Hæmorrhage.

DR. J. A. KENNEDY (Shepparton) showed a man, aged forty-five years, who had been admitted to the hospital on May 9, late in the afternoon, approximately eight hours after having fallen in a fit at morning mass. The patient had been unable to remember anything after arrival at church, but complained of severe headache. At the first examination at the hospital the patient was trembling, lethargic and mentally confused; his temperature was 100·2° F.; his pulse rate was 60 per minute, and his pulse was steady and of good volume; the blood pressure readings were 150 millimetres of mercury, systolic, and 80 millimetres, diastolic. The pupils were equal and reacted normally to

light and accommodation and the fundi were normal in appearance. Definite signs of meningeal irritation were elicited, including neck stiffness, exaggerated tendon jerks, knee clonus and bilateral Kernig and Babinski reactions. No abnormal features were found to be associated with the heart, lungs or abdominal viscera.

The provisional diagnosis of meningitis was made and lumbar puncture was performed, fluid being withdrawn under a pressure of 190 millimetres of water; it was heavily blood-stained, the blood was evenly mixed through it, the supernatant fluid on settling was xanthochromic and no organisms were seen in prepared microscopic specimens; the fluid was submitted for the Kahn test, which produced a negative result. On that evidence the diagnosis of subarachnoid hæmorrhage was made and further investigations were carried out. Apart from the presence of crystals of calcium oxalate, no abnormal constituents were found on examination of the urine. From the skiagrams of the skull a small circular defect was visualized, one centimetre in diameter, just behind and to the left of the mid-line with bulging of the pericranium. Radiographic films of the chest revealed no abnormality.

Dr. Kennedy then said that during the next few days the patient's condition rapidly improved, the headache became much less severe, the temperature returned to normal and the pulse rate ranged from 65 to 75 per minute; the blood pressure dropped to 112 millimetres of mercury, systolic, and 60 millimetres, diastolic, on the second day, but recovered till it became steady at 140 millimetres of mercury, systolic, and 80 millimetres, diastolic; the hypertonicity and other abnormal central nervous system signs had all disappeared by the fifth day. With the exception of some signs of indigestion from time to time the patient's past medical history was good, and nothing relevant to the present illness was discovered.

DR. JOHN CAHILL, JUNIOR (Melbourne), expressed agreement with the diagnosis and suggested that the hæmorrhage might have been caused by the rupture of a small congenital subarachnoid aneurysm. As there were no residual signs of damage to the central nervous system, he thought that the prognosis was good. Many such patients escaped without recurrences.

DR. K. LIDGETT said that at times blood passed forward along the optic nerve, producing pre-retinal subhyaloid hæmorrhage; if that was found, it would be a good substantiating point for the diagnosis; but naturally its absence did not affect the diagnosis.

DR. A. F. TAYLOR suggested the possibility of the presence of a tumour and basal hæmorrhage.

DR. J. B. MCMIKEN expressed the view that a tiny cystic lesion might be present in the region of the anterior fontanelle, as the appearances of a slight swelling on the outside of the pericranium were detectable on close examination of the skiagrams. He was not prepared to explain those appearances, but thought that they could be related to a small venous aneurysm which might have been the site of the subarachnoid hæmorrhage. He did not feel justified in being definite on the matter; occasionally a similar defect had proved to be due to cholesteratomata—cholesterin-filled cysts.

Primary Tuberculous Pneumonia.

DR. J. B. MCMIKEN showed two brothers, aged respectively three and five and a half years, to illustrate two different forms of onset of tuberculous pneumonia in the same family infection. The mother of the two boys had died of pulmonary tuberculosis in October, 1947, and on November 20, L.C., the younger boy, was brought to the hospital with high fever rather suggestive of meningitis. A few days later a positive Mantoux reaction was obtained, and from skiagrams it was considered that consolidation was present at the base of the right lung, with a small amount of fluid. In the opposite lung fields were the appearances of nodular congestion suggestive of acute miliary spread from the right-sided tuberculous pneumonic lesion. By December 8 evidence of improvement was obtained; the fluid was less in amount, the left lung fields were less congested and the miliary shadows had gone. By January 2, 1948, further clearing had occurred, but glandular masses at the hilum were evident. In further films prepared at the end of April increased infiltration was apparent, and as the boy's general condition was not completely satisfactory approval was sought for the supply of streptomycin for use in treatment; but the recommendation was not accepted by the committee.

Meanwhile, on December 8, 1947, the older boy, D.C., was sent to the hospital for investigation as a contact, though according to the father he had been well. From the skiagrams it was deduced that complete consolidation of the upper lung field had occurred. Those appearances had remained unaltered for over four months. The boy was in hospital and a course of streptomycin therapy was in progress.

DR. H. BOYD GRAHAM (Melbourne) said that the problem of child contact with actively tuberculous subjects was constantly cropping up and assumed formidable proportions at a place like the Children's Hospital, Melbourne. He and his colleagues at that hospital believed that children like the older boy shown by Dr. McMiken developed immunity which protected them from developing clinical tuberculosis; however, "open" lesions or generalization were apt to occur in some cases, though often later in life, especially when a strongly positive Mantoux reaction was obtained early in childhood. He did not think that it was necessary to use streptomycin for either of the two boys, though, of course, it might be life-saving if tuberculous meningitis complicated the picture later. It was desirable to keep them under observation and periodically to prepare skiagrams for study.

DR. L. P. WAIT (Melbourne) said that it was surprising how well some of the contacts looked by contrast with the radiological evidence of infection; it was by no means unusual to pick them up on routine examination. He was not particularly worried by the skiagrams in Dr. McMiken's cases. The children should be removed from contact and should be kept under observation. Streptomycin had its greatest use in tuberculous meningitis; two or three children had recovered from that frightful condition at the Children's Hospital, but a number had died, and active lesions had been found at autopsy after enormous amounts of streptomycin had been used. Dr. Wait then drew attention to the danger of contracting measles, which seemed to light up tuberculous infections. He also considered that bronchoscopic examination of these patients should be avoided.

Major-General Norris said that he was afraid of the child who failed to react to the Mantoux test, and who presented the radiological appearances of a lesion presumably of tuberculous origin without clinical signs or symptoms. The "snow-storm" chest and negative Mantoux response were danger signs indicative of liability to meningeal involvement, and those patients should have a high priority for streptomycin.

A MEETING of the South Australian Branch of the British Medical Association was held on May 20, 1948, at the Repatriation General Hospital, Springbank. The meeting took the form of a series of clinical demonstrations.

Myasthenia Gravis.

DR. J. L. STOKES showed a male patient, aged thirty-one years, whose symptoms had first been noticed in February, 1947. The lid of the left eye used to droop; the condition became worse as the day progressed and was better when the patient had had a night's rest. The patient was examined by a consultant physician, and treated with increasing doses of "Prostigmin" given orally, and with ephedrine and potassium salts. On August 4, 1947, the condition had progressed further; the right eye had become involved in July, and the extrinsic muscles of both eyes were involved, though the patient experienced no difficulty in swallowing or phonation. No weakness was found elsewhere. X-ray examination of the chest revealed no evidence of enlargement of the thymus. Increasing doses of "Prostigmin" by injection were necessary, and thymectomy was discussed. It was decided to give X-ray therapy first, and this was commenced on August 21. At first more and more "Prostigmin" was necessary to control the symptoms, the dosage reaching 2·5 milligrammes four times a day on October 9. By the end of October a lower dosage had become necessary, the patient commenting on the increased effect of the "Prostigmin". He was discharged from hospital on November 14, with the dosage of 1·5 milligrammes three times a day. Since March, 1948, no "Prostigmin" had been necessary, though the right external rectus was still weak. The patient had been able to take a Commonwealth Reconstruction Training Scheme course in carpentry without symptoms other than diplopia.

Tricuspid Stenosis: Possible Cure of Bacterial Endocarditis by Penicillin.

DR. T. P. DEARLOVE showed a male patient, aged twenty-seven years, with a history of two attacks of rheumatic fever, one in 1943 and one in 1944. Cardiac involvement occurred in the first attack with the development of mitral stenosis. The second attack in 1944 was more severe and accompanied by some congestive cardiac failure, and clinical examination of the heart at this time revealed a loud apical systolic murmur, with faint diastolic and presystolic murmurs at the apex; a systolic murmur was heard at the base.

In 1947 the patient was admitted to the Repatriation General Hospital, Springbank, suffering from congestive cardiac failure. It was noted at this time that the cardiac murmurs had changed from those recorded in his service notes in 1944. An examination of the heart revealed that the apex was half an inch outside the nipple line in the fifth left intercostal space. The rate was rapid (100 per minute). The rhythm was regular. A thrill was palpable over the apex, and loud systolic murmurs were heard in this area. In addition a loud diastolic murmur and a softer systolic murmur were heard just to the right of the lower end of the sternum, in the tricuspid area. These murmurs were obviously different in quality from those heard at the apex. The blood pressure was 125 millimetres of mercury (systolic) and 70 millimetres (diastolic). The liver was enlarged two inches below the right costal margin, and was tender, but not pulsating. A moderate degree of œdema of both ankles and a lumbar pad were observed. The cervical veins were engorged and pulsating. The patient's colour was pale, and some cyanosis of the lips was present. X-ray examination revealed some cardiac enlargement of the "mitral" type; X-ray examination after the ingestion of a barium bolus was not carried out. The electrocardiogram showed right axis deviation.

The diagnosis was made of tricuspid stenosis, combined with mitral stenosis, and probably also with an aortic valve lesion.

Dr. Dearlove said that since then the patient had had a persistently enlarged liver, and the cervical veins were always engorged even when he was ambulatory and had no other gross signs of cardiac failure. He had developed a pale, greenish cyanotic colour of the skin of the face—the so-called "cyanotic icterus". He had never had abdominal ascites, or fluid in the right pleural cavity.

In October, 1947, the patient "caught a cold", which failed to clear up. He started to have an evening rise of temperature up to 100° F., and his general condition began to fail. A diagnosis of bacterial endocarditis was made, because he presented the following features: (i) otherwise unexplained pyrexia; (ii) loss of weight and strength and deterioration in the cardiac condition; (iii) secondary anæmia, the hæmoglobin value being below 70% of normal; (iv) leucocytosis (neutrophilic) of 14,500 per cubic millimetre; (v) a pale muddy colour—a "*café au lait*" tint; (vi) early clubbing of the finger tips, but without any marked tenderness of the tips. The signs against a diagnosis of bacterial endocarditis were: (i) absence of demonstrable enlargement of the spleen; (ii) absence of embolic phenomena in the peripheral circulation as in the renal circulation; (iii) absence of petechiæ; (iv) failure of four attempts at culture from the blood to grow any organisms; serial blood cultures were not attempted, nor was a culture of the sternal marrow attempted.

The condition was regarded as a possible bacterial infection involving the right side of the heart only. On clinical grounds it was decided to commence a course of penicillin therapy without further delay. Over a period of seven weeks the patient was given 35,500,000 units of penicillin intramuscularly—at first 15,000 units every four hours, then later 100,000 units every eight hours. After about fourteen days' treatment the pyrexia ceased, and from then on his general condition improved; it had remained reasonably good since.

The following points were raised in discussion: (i) the difficulties of diagnosing tricuspid stenosis with murmurs present from the mitral region; (ii) the inadvisability of delaying treatment whilst exhaustive blood cultural investigations were in hand when bacterial endocarditis was suspected; (iii) the criteria for the cessation of penicillin therapy; (iv) the necessity for prolonged and gradual convalescence after the active treatment.

Chronic Thyreotoxic Myopathy.

DR. K. V. SANDERSON showed a male patient, aged twenty-four years, who had been serving in the Royal Australian Air Force in 1944 when he noticed that he tired easily and could not concentrate as before, and that his heart beat more rapidly than usual. He was discharged from the service in 1945, and was not sufficiently concerned at his symptoms to seek medical advice. Since then his condition had become worse, and at the time of the meeting he complained of muscular weakness and of fatigue after very little exertion, of extreme dislike of hot weather, of tremulousness and palpitations, of the loss of over one stone in weight despite an excellent appetite, of nerviness and of alteration in his voice. The last-mentioned symptom had been noticed by his relatives for eighteen months. His condition had deteriorated rapidly in the last two months. He had carried out his occupation of carpenter until his admission to hospital, but had become increasingly inefficient. There was no relevant history of previous illness or of family disease.

Examination showed the patient to be a tall, thin, nervous, fresh-complexioned young man. His voice was nasal and "windy" as if he had a cleft palate. His skin was warm and moist. Lid lag was present in the eyes, but there was no exophthalmos. The tongue did not protrude fully, and fasciculation was noted. There was no defect in the palate, which moved a little less than normal. The lobes of the thyreoid gland were moderately and symmetrically enlarged. The waking pulse rate varied from 90 to 160 per minute, the sleeping pulse rate from 80 to 90 per minute. The heart action was forceful, the apex beat was not displaced, and a faint systolic bruit was heard at the apex. The blood pressure was 150 millimetres of mercury, systolic, and 75 millimetres, diastolic. The liver was not palpable, but examination of the conjunctivæ revealed jaundice. Weakness and wasting were detected in the muscles of the proximal segments of the limbs and of the shoulder and pelvic girdle. This was most obvious in the triceps and quadriceps; these muscles were much more easily fatigued than normal. Occasional coarse fasciculation was seen in the affected muscles. There was a fine tremor of the outstretched fingers. No other abnormality was detected in the nervous system. The basal metabolic rate was found to be +98% at the first estimation, and after seven days' sedation and rest it was +68%. The blood cholesterol level was 116 milligrammes *per centum*. The galactose tolerance curve rose to a level of 60 milligrammes *per centum* at sixty minutes. Radiological examination of the chest revealed no abnormality. The blood picture was essentially normal.

Dr. Sanderson said that the patient under discussion, whose condition was as yet incompletely investigated, presented an example of what Brain had described as chronic thyreotoxic myopathy. Only a small number of such cases had been described, and that under discussion broadly conformed to type. However, so far as could be ascertained, the present patient was the youngest on record. The incidence was commonly in the age group forty to sixty years. The type of bulbar involvement was also unusual; other patients had always predominantly complained of hoarseness of the voice and of difficulty in swallowing, and mostly had suffered from profound general muscular weakness as well. The course had been longer and more benign than in other cases reported. The patient was to be treated by partial thyreoidectomy, which should produce a complete and permanent cure. Dr. Sanderson said that he hoped to report the case in full when the investigations and treatment had been completed.

DR. M. E. CHINNER said that severe thyreotoxicosis associated with signs of bulbar palsy and jaundice was of great interest. The myasthenic reaction in thyreotoxicosis was not uncommon; but in his experience bulbar signs were uncommon. It was interesting that some improvement had followed the use of "Prostigmin". The other symptom, jaundice, was also rare. Lichtman and Means considered jaundice as due to the depletion of glycogen and as evidence of liver cell damage. Dr. Chinner said that the patient was to undergo early thyreoidectomy; but in view of the severe liver damage, he strongly urged the administration of a diet rich in protein, massive vitamin B_1 therapy, and the giving of food of high glucose content before the operation was performed, as deaths had occurred from acute yellow atrophy of the liver after the operation in severe cases.

Disseminated Sclerosis.

DR. R. R. ROBEY showed a male patient, aged forty-nine years, who had been admitted to hospital on April 23, 1948. The patient had been well for most of his life. He had been in the hospital two months earlier with an upper motor neuron lesion of his right facial and hypoglossal nerves. No cause for this was found, all investigations at the time giving negative results. The lesions almost completely recovered, and he was discharged from hospital. His present complaint was of loss of balance when walking; he had first noticed it about eight days earlier when playing tennis—he found that he tended to veer to the left. This condition became worse, and at the time of his admission to hospital he found that his left leg dragged when he was walking. He said that his left hand felt awkward, and also his speech if he talked fast. He had had a similar illness about twenty years earlier, from which he recovered completely after about three months in bed. At the time of the meeting he had no other symptoms and no headache. He had never had any visual disturbances. On the patient's admission to hospital, examination showed that his speech was a little slurred. The plantar reflexes were both equivocal, and some Rombergism was present. The patient had a tendency to drag his left foot a little while walking.

On April 25 he said that he felt worse, and he noticed difficulty in maintaining his balance while standing. On examination of the patient, the left side of his face seemed a little weak. His tongue protruded a little to the left. Rombergism was a little more pronounced. His speech was more slurred.

On April 27 examination of the patient disclosed that the abdominal reflexes were absent. Hypotonia of the right limbs was present. Vibration sense was diminished in the right leg. Gross ataxia of the right arm and leg was present—past pointing, intention tremor *et cetera*.

On April 29 the signs were unchanged; the patient complained of double vision. On April 30 paresis of the right internal rectus and nystagmus were present. The patient's speech was very slurred; slight aphasia, suggesting motor aphasia, was present. On May 5 a tendency towards Babinski's response was detected in both plantar reflexes. On May 10 paresis of the right sixth nerve was present. On May 20 the ocular palsies had decreased a little, the facial weakness was variable and the speech was less slurred. Ataxia was not so obvious.

A number of special investigations had been carried out. An X-ray examination of the skull revealed no abnormality. Lumbar puncture was performed and the cerebro-spinal fluid was examined; no abnormality was detected, the protein content of the fluid was normal, and the Wassermann test and the colloidal gold test produced negative results. The blood picture was normal, and the blood serum failed to react to the Wassermann and Kline tests. The optic fundi appeared normal, though the disks were possibly a little pale; the visual fields were full.

Dr. Robey said that the diagnosis was disseminated sclerosis. Vascular, syphilitic and space-occupying lesions had been considered, but did not fit in with all the clinical findings and the past history. The prognosis was difficult in an individual case. The course of the disease was variable, with remissions. Cure was not possible; progress might be slow, with remissions, and the patient might die of something else; or progress might be rapid, and the patient might die from paraplegia in flexion. Treatment was entirely symptomatic, no known treatment having any effect on the progress of the disease. The patient under discussion had been given copper sulphate, one-tenth of a grain twice a day; this measure was based on the reported occurrence of syndromes resembling disseminated sclerosis in workers on swayback in lambs. No assessment of treatment could be made in such a disease, except by prolonged observation of large numbers of patients, and assessment of their progress, half with treatment and half without.

DR. M. E. CHINNER said that in the case of disseminated sclerosis under discussion there were no unusual signs or symptoms; but from the ætiological side the disease was puzzling, and many possible causes had been suggested. (i) Hurst considered that the disease might be due to some enzymatic process or to specific poisoning of some enzyme system, as he was able to produce similar lesions with potassium cyanide. Other chemical substances, such as arsphenamine *et cetera*, might cause similar results. (ii) Workers at Oxford had suggested that the disease might be due to a trace element deficiency, because several workers on swayback in lambs had been affected with a disease indistinguishable from disseminated sclerosis. They had advised the use of small doses of copper sulphate in this disease. (iii) Rabat and Wolff suggested that the disease had an allergic basis, as they had been able to produce lesions in monkeys' brains by the injection of crushed rabbit's brain *plus* adjuvants, and after a certain time disorders like disseminated sclerosis had occurred. (iv) The infective theory had been suggested by the unconfirmed work of Margulis *et alii* in Russia. From their work it was thought that a filter-passing virus isolated from patients suffering from acute disseminated encephalomyelitis might be the infective agent. They found neutralization tests to produce positive results in 50% of a small series of cases of disseminated sclerosis. Thus it could be seen that the disease might represent the reaction of myelin to a number of different causes, as there were other examples of a tissue's reacting in the same way to varying toxins *et cetera*. But the fact remained that at present the problem of the ætiology of disseminated sclerosis had not been solved.

VICTORIAN BRANCH NEWS.

MEMBERS of the Victorian Branch of the British Medical Association are advised that on account of the visit of Professor Spence, no monthly meeting of the Branch will be held in September.

Correspondence.

CANCER.

SIR: Since 1928 the treatment of cancer in Australia has been a burning question. In New South Wales, beyond a share of the one hundred thousand pounds worth of radium bought by the Commonwealth Government, the University of Sydney Fund's gift of deep X-ray machines to the clinical hospitals, the establishment of the State Physical Bureau for Radon at the Royal Prince Alfred Hospital, the unused £200,000 allocated by the McKell Government, and the recent generous Hallstrom gift of £50,000 to the Sydney Hospital, no practical advance in treatment has as yet been evident.

It is lamentable to realize that, notwithstanding the much advertised congresses at Canberra and elsewhere and a prolonged newspaper campaign culminating in the Braund fiasco, there are no five and ten year cure statistics available after twenty years' work except those kept in the gynæcological department at the Royal Prince Alfred Hospital and these could never have been published except for the generous help given by Police and Registrar-General's Departments. No financial backing from the Commonwealth, State or university was received. The effort was entirely honorary on the part of the staff.

If such be the state of affairs, and I would welcome factual contradiction *re* internal cancer, it is high time that we take stock of the world attitude towards this killer of human beings before their allotted time and try to do something practical towards the salvage of the 8937 (1945) people who die from cancer in Australia each year. As on the average a third of all cases presenting themselves for treatment each year are cured for five years or more, we can roughly estimate the total number of people in the Commonwealth suffering from cancer at any one time as 12,000.

The discovery of the effects of mesothorium and β and γ rays, high frequency, radium and deep X rays on cancer cells intrigued the professional mind and led the man in the street to think at last a real cure for cancer had been discovered. After trial and error the position has revealed itself to all trained workers in this field of professional effort. Both Europe and America and we locally are beginning to recognize that radiotherapy has not come up to the sanguine expectations once held, nor probably will the recently announced atomic synchroton, an electron acceleratory machine which produces 30 million volt X rays, as like the radium bomb and the high voltage X rays it is only an exaggeration of present known radiotherapeutic principles.

All medical men know that from the treatment point of view cancer is divided into surface or skin cancer (50%) and internal cancer (50%). All admit that radiotherapy has had great successes in the former, but that the latter still comes within the province of the surgeon mainly because lymph nodes are unaffected by radiotherapy. I am informed that Dr. George Holmes, who was dean of all the röntgenologists of the United States of America, believed it impossible to cure by rays squamous and adenocarcinomatous involvement of the lymph glands.

Before the irradiation era surgeons told sufferers to sacrifice their leg, arm, breast, kidney, rectum, stomach, lung or uterus *et cetera* if they still wished to live on. It is much the same today, and until some injectible fluid or biological miracle comes along all those with internal cancer would be wise to follow the advice of their surgeons.

Already three advisers on the subject of cancer treatment have been brought from England to Australia, Dr. Burrows from Manchester, Professor Dods from the Courtauld Institute, London, one of the greatest scientific researchers in Britain today, and Dr. Ralston Paterson from the Holt Institute, Manchester. Like the British Medical Association committee set up to advise the Government, they were not unanimous in their recommendations.

What practical steps should this State, which loses by death each year 3430 (1945) cancer sufferers, take to lessen this wastage? If we add the one-third who are cured, there are roughly four and a half thousand cancer cases in the whole of New South Wales at any given time. The problem of salvaging more of the doomed section is not beyond the profession's capacity if it is tackled in a practical way.

As one of the surgeons who have had to contend with internal cancer all along I might be permitted to express the opinions of myself and most of my surgical colleagues. Cancer and its treatment must be considered under three definite categories:

1. Academic research into the cause of cancer. This is entirely the province of the university scientific laboratories and the institutes associated with the clinical hospitals. Cancer research is so complex, that teams rather than a single worker should be engaged upon it. A minimum team should have a biochemist, physicist, pathologist and many scientifically minded clinicians, and the best environment is the laboratories of the clinical hospitals.

2. Treatable cases. It is against the interest of this group to segregate them in a separate isolated institution. It is not only psychologically depressing to be housed with dying and hopeless cases, but deprives them of the services of the first specialists in all other branches of medicine. All the best surgeons and radiotherapeutists are already on the staffs and the equipment for every known method of curative treatment already exists in these institutions.

3. Cases beyond curative treatment. Much can still be done by medical science and good nursing to relieve and ameliorate the suffering of these doomed subjects. There is a definite lack of accommodation for this group in Sydney which is the reason for the overcrowding of the cancer beds in clinical hospitals. Medical men will not discharge such cases until they are assured that they will have good nursing and as painless a death as possible. It is pathetic to see these poor sufferers fighting death, the anguish of their relatives who would part with their last pennies to save them, and we the responsible advisers must also take note of the depressing psychological effect on the oncoming generation if we send them home. The young family seeing mother or father dying from what in the last stage is a foul-smelling, demoralizing and to the surviving partner a financially devastating disease would stir the most callous. Even the rich are willing to pay handsomely to see their dying relatives looked after by a proper nursing organization which only old-established institutions can provide.

In view of the millions spent on cancer in Europe and America since the first world war and the fact that the first world health assembly representing 73 nations at present meeting at Geneva have not given the subject a first priority on its agenda (*The Sydney Morning Herald*, June 10), how best can the £300,000 which has been provided in this State for the fight against cancer be expended? The amount is far too small to attempt to build, equip and maintain such an institute as the Cornell of New York, and it is doubtful, even if the funds were available, that it would be the best solution. My colleagues and I after long and earnest consideration believe that the greatest good would be done sufferers in this State by: (i) assisting research at the university and the institutes attached to the clinical hospitals; (ii) providing efficient and modern equipment at the present clinical hospitals which have trained specialist staffs in every branch of the work; (iii) providing adequate hostel accommodation for those beyond curative treatment, where equipment for ameliorating and heroic experiments should be available, and to which the research teams should have access for blood, cytological and other examinations.

Finally the considered opinion of myself and my colleagues is that it would be a mistake to erect a separate cancer hospital as proposed by the Government and it would not be to the advantage of cancer sufferers in this State. The treatable and those beyond treatment should be separated.

Yours, etc.,

185, Macquarie Street, Sydney,
June 28, 1948.

HERBERT H. SCHLINK.

Nominations and Elections.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Reid, Ross Trevor Wishart, M.B., B.S., 1947 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.
Goode, Benjamin Ryall, M.B., B.S., 1947 (Univ. Adelaide), Frome House, North Terrace, Adelaide.
Milton, Gerald White, M.B., B.S., 1947 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association:

Paintar, Rowland George, M.B., B.S., 1947 (Univ. Adelaide), 14, North Terrace, Highgate, South Australia.
Hallett, Evan Charles, M.B., B.S., 1947 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

The undermentioned have been elected as honorary associates of the New South Wales Branch of the British Medical Association:

Fischer, Enid, 8, Grosvenor Crescent, Cronulla.
Martin, Gwenda, 60, Park Avenue, Roseville.
Orr, Kevin Bridson, 7, Gamba Road, Bellevue Hill.
Tarn, Ruth, 4, Clifford Street, Gordon.
Watson, Lyal Clifton Albert, 637, Blaxland Road, Eastwood.

Diary for the Month.

AUG. 21.—Western Australian Branch, B.M.A.: Special Meeting.
AUG. 24.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 25.—Victorian Branch, B.M.A.: Council Meeting.
AUG. 26.—New South Wales Branch, B.M.A.: Branch Meeting.
AUG. 27.—Queensland Branch, B.M.A.: Council Meeting.
SEPT. 1.—Victorian Branch, B.M.A.: Branch Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 235, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health). Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

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